

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

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

Dated/ दिनांक : 08/09/2022

**Open Tender Notice No. / खुला प्रस्ताव निविदा सूचना नंबर: IITD/COMP(SP-3960)/2022**

Indian Institute of Technology Delhi is in the process of purchasing following item(s) as per details as given as under. इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली निम्नलिखित मदों की खरीद की प्रक्रिया में है।

<b>Details of the item</b> आइटम का विवरण	<b>Appointment of an agency for Design, Site Preparation, Supply, Installation, Testing, Commissioning, Operations and Maintenance of Basic Infrastructure for the establishment of Data Centre at IIT Delhi, Sonipat Campus</b>
<b>Earnest Money Deposit to be submitted</b> बयाना जमा करने के लिए जमा राशि	<b>10,00,000/- (Ten Lacs Only)</b>
<b>Warranty</b> वारंटी अवधि	<b>1 Years/1 साल</b>
<b>Performance security</b> निष्पादन सुरक्षा	<b>3% of item value</b>
<b>Delivery Schedule</b>	<b>25 weeks <u>Pl. refer Terms &amp; Conditions No.12</u></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 and Services
Type/Form of Contract (Work/Supply/ Auction/ Service/ Buy/ Empanelment/ Sell)	Supply
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Others
Source of Fund (Institute/Project)	<b>Budget Code</b> 35.01.17 (N-MoE)
Currency	<b>Indian Rupee (INR)</b>
Date of Issue/Publishing	<b>08/09/2022 (17:00 Hrs)</b>
Document Download/Sale Start Date	<b>08/09/2022 (17:00 Hrs)</b>
Document Download/Sale End Date	<b>06/10/2022 (15:00 Hrs)</b>
Last Date and Time for Uploading of Bids	<b>06/10/2022 (15:00 Hrs)</b>
Date and Time of Opening of Technical Bids	<b>07/10/2022 (15:00 Hrs)</b>
Tender Fee (If any)	<b>Rs. <u>NIL</u> /- (For Tender Fee)</b> (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)	<b>180 days</b> (From date of opening of technical bids)
Address for Communication	Head, Computer Service Centre, IIT Delhi, Hauz Khas, New Delhi- 110016
Contact No.	+91 11 26591781, 26597130
Fax No.	--
Email Address	dctender@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 निः 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 II द्वितीय या कक्षा III प्रमाण पत्र के साथ महत्वपूर्ण उपयोग पर हस्ताक्षर करने) की आवश्यकता होगी (जैसे सिफ़ी / टीसीएस / एनकोड / ई-मुद्रा आदि), उनके प्रोफाइल के साथ

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

केवल एक मान्य डीएससी एक बोलीदाता द्वारा पंजीकृत होना चाहिए। कृपया ध्यान दें कि निविदाकर्ता यह सुनिश्चित करने के लिए 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 फाइल को डाउनलोड करने, इसे खोलने और अपने संबंधित वित्तीय उद्धरण और अन्य विवरण (जैसे बोलीदाता का नाम) के साथ सफेद रंगीन (असुरक्षित) कोशिकाओं को पूरा करना आवश्यक है। कोई भी अन्य कक्ष नहीं बदला जाना चाहिए। एक बार विवरण पूरा हो जाने पर, बोलीदाता को इसे सहेजना होगा और इसे ऑनलाइन जमा करना होगा, बिना फाइल नाम बदलना। यदि BOQ फाइल 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 संकेत 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 प्रोकरमेंट पोर्टल के जरिए <https://eprocure.gov.in/eprocure/app> पर ऑनलाइन निविदाएं जमा कर सकें।



**Computer Services Centre  
Indian Institute of Technology  
Hauz Khas, New Delhi-110 016**  
**NOTICE INVITING QUOTATIONS**

**Subject: Appointment of an agency for Design, Site Preparation, Supply, Installation, Testing, Commissioning, Operations and Maintenance of Basic Infrastructure for the establishment of Data Centre at IIT Delhi, Sonipat Campus**

**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 **Appointment of an agency for Design, Site Preparation, Supply, Installation, Testing, Commissioning, Operations and Maintenance of Basic Infrastructure for the establishment of Data Centre at IIT Delhi, Sonipat Campus** 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>

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).

**Invitation for bids**

IIT Delhi invites detailed technical and commercial bids, from eligible for design, commissioning, maintenance, and operations of a Data Centre at IIT Delhi, Sonipat Campus. The Data Centre is to be constructed according to Tier 3 standards and will host approximately 24 Racks.

The scope of the work will include

1. Detailed design and site preparation of the Data Centre involving civil, electrical, and mechanical work including dismantling, false ceiling, raised flooring, moisture sealing, fortification of windows and all other necessary components.
2. Supply, installation and commissioning of basic infrastructure, UPS, air conditioning, fire prevention and detection systems, lighting, access control and surveillance systems, rodent control system, BMS and Data Centre integrated management system (DCIM) and internal and external illumination.
3. Supply, installation and commissioning of racks with RDHx and iPDUs
4. On-site maintenance of the Data Centre for at least 5 years
5. On-site operations and support by qualified engineers on a 24 x 365 basis for at least 5 years to ensure at least 99.98% service availability.
6. Real-time measurements of all components of the Data Centre as per *ASHRAE real-time energy consumption measurement in Data Centre 2009 (best practical)* guidelines.
7. Clearance from all relevant government authorities – including and not limited to power, heat, and pollution.



## 1. Contact details

Head, Computer Services Centre

IIT Delhi

Hauz Khas

New Delhi 110016

Email: [dctender@iitd.ac.in](mailto:dctender@iitd.ac.in)

Phone: +91 11 26591781, 26597130 (during office hours)

## 2. Sizing and technology options

- Load: Data Centre racks (24)

#	Particulars	Quantity	Capacity per rack (kW)	Connected Load (kW)
1	Compute	20	30	600
2	Networking	2	10	20
3	Storage	2	15	30
	Total Actual IT Load			650
	Total Design IT load (20% extra)			780

- *The total weight of the rack (including computer equipment, RDHx, coolant and piping etc) should not exceed 1,100kg. The weight of the equipment (Servers and ancillary equipment) to be housed in the rack would be maximum of 750kg.*

- UPS Capacity calculation (to be filled by the bidder) Total Actual IT load is to be considered

Sl. No.	Connected Source	Total Connected Load (KW)	KW demand of load considering 80% loading	UPS rated PF	KVA demand for UPS	Suggested Rating
1	1					
2	2					

- Bus Bar Trunking (to be filled by the bidder)

Feeder Controlled From	Equipment Description	Tag No.	Voltage (V)	Voltage Type & Supply System	Quantity	No. of Rack to connect
Tap off Box		Connected Load	Power Factor	Total Connected Load	Circuit current	Required BBT= 1.5* circuit current
Nos	Rating	KW		KW	AMP	AMP

- HVAC

1. The air-conditioning of the Data Centre and its associated support area should be provided from a common chiller system.
2. The chillers, along with any ancillary equipment will be installed on the second-floor terrace adjoining the Data Centre.
3. The HVAC systems should have N+1 redundancy (minimum 20% or 1 unit, whichever is higher).
4. The inlet air temperature to the servers should be maintained at 24°C and humidity as per ASHRAE guidelines.
5. The cooling system in the server rack area should be designed using a combination of precision air conditioning (PAC) systems and active rear door heat exchangers (RDHX).
6. The cooling systems should perform efficiently at variable load conditions. The overall cooling solution should be designed to achieve a low PUE. The target annualized power usage effectiveness (PUE) should be 1.45 or lower. Realtime overall facility-level PUE monitoring and display should be provided.
7. There should be redundant paths for all critical components and there should not be any single point of failure.
8. The areas other than those hosting the server farms and the network racks should be fitted with suitable comfort cooling systems. To the extent possible the cooling for these areas should also be provided by the same HVAC units.

In addition, the air conditioning system should provision for

1. Air filtration as per standards.
2. Heating (if necessary) and humidifiers to maintain correct operating environment throughout the Data Centre.
3. Automatic control systems for programmatic control of the cooling system and real-time monitoring.
4. Free cooling using cool ambient air whenever feasible.

**The overall cooling solution should follow ASHRAE Standard 90.4 - 2019 along with ASHRAE Standard 90.1 - 2019 guidelines.**

- PAC (to be filled by the bidder)

1	Source	
	Nos	Total Actual IT Load
	Tr	Total Cooling Requirement
	Tr	10 % Cooling Requirement on PAC
	(Tr)	PAC cooling requirement on 80% loading (Tr)
	Nos	Running PAC Qty
	Tr	Required PAC capacity
	Nos	Redundant PAC
	(Tr)	Recommended PAC (Tr)
	Nos	Total PAC
	KW	Input KW per PAC
	kw	Total Input KW PAC

- Chiller (to be filled by the bidder)

1	Source	
	Kw	Total Actual IT Load
	Kw	90% Cooling Requirement on chiller
	Tr	Total Cooling Requirement
	Tr	Cooling requirement on chiller on 80% loading
	Nos	Running Chiller Qty
	Nos	Redundant Chiller
	Tr	Chiller required capacity
	(Tr)	Recommended PAC (Tr)
	Nos	Total Chiller
	KW	Input KW per PAC
	kw	Total Input KW PAC

- Transformer and Diesel Generator (to be filled by the bidder)

Source	IT Load	PAC Electrical load	Chiller & Pumps Electrical load	Lights & other Non-IT Load	Total Load	Power Factor	Total Load	T/F requirement on 80% loading	Recommended Transformer rating	Running DG requirement	Minimum required DG rating	Recommended DG rating	Redundant DG	Total DG requirement (Running + Redundant)
	kW	kW	kW	kW	kW		kVA	kVA	kVA	Nos	kVA	kVA	Nos	Nos
1														

Number of HT Transformers must be 2 numbers in quantity with 2 different routes from the feeder. Supply upto location of HT Panels on the ground floor will be provided by IIT Delhi.

### 3. EMD

- The System Integrator or Its Authorized Partner shall furnish, as part of the bid, an Earnest Money Deposit (EMD) of the amount |**10,00,000 (Rupees Ten Lacs Only)**.
- The EMD shall be denominated in Indian Rupees and shall be in the form of a Demand Draft issued by a Nationalised/Scheduled Bank, in favour of **Registrar, IIT Delhi**.
- The EMD of the unsuccessful bidders will be discharged/returned after award of contract to the successful bidder. No interest will be paid by the Purchaser on the EMD.
- The EMD of the successful bidder will be discharged after executing the contract and furnishing the Bank Guarantee for contract performance as described in Section 4. No interest will be paid by the Purchaser on the EMD.
- The EMD may be forfeited:
  - if a System Integrator or Its Authorized Partner withdraws its bid during the period of bid validity specified by the System Integrator or Its Authorized Partner in the Bid; or
  - in the case of a successful System Integrator or Its Authorized Partner, if the System Integrator or Its Authorized Partner fails
    - To sign the final Contract and agree to the conditions of the tender.
    - To furnish Bank Guarantee for contract performance in accordance with the terms and conditions of the tender (Section 4).

#### **4. Period of validity of bids**

Bids shall remain valid for 180 days after the date of opening of technical bids prescribed by the Purchaser. A bid valid for a shorter period may be rejected by the Purchaser as non-responsive.

In exceptional circumstances, the Purchaser may request the System Integrator or Its Authorized Partner (s) for an extension of the period of validity up to 180 days more. The request and the responses thereto shall be made in writing.

#### **5. Revelation of Prices**

Prices in any form or by any reason before opening the Commercial Bid should not be revealed, failing which the offer shall be liable to be rejected.

#### **6. Terms and Conditions of System Integrator or Its Authorized Partner s**

Printed terms and conditions of the System Integrator or Its Authorized Partners will not be considered as forming part of their bids.

#### **7. Local Conditions**

- It will be incumbent upon each System Integrator or Its Authorized Partner to fully acquaint himself with the local conditions and other relevant factors at the proposed Data Centre site which would have any effect on the performance of the contract and / or the cost.
- The System Integrator or Its Authorized Partner is expected to make a site visit to the proposed Data Centre facility to obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into contract.
- Failure to obtain the information necessary for preparing the bid and/or failure to perform activities that may be necessary for the providing services before entering into contract will in no way relieve the successful System Integrator or Its Authorized Partner from performing any work in accordance with the Tender documents.
- It will be imperative for each System Integrator or Its Authorized Partner to fully inform themselves of all legal conditions and factors which may have any effect on the execution of the contract as described in the bidding documents. The Purchaser shall not entertain any request for clarification from the System Integrator or Its Authorized Partner regarding such conditions.
- It is the responsibility of the System Integrator or Its Authorized Partner that such factors have properly been investigated and considered while submitting the bid proposals and that no claim whatsoever including those for financial adjustment to the contract awarded under the bidding documents will be entertained by the Purchaser and that neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted by the Purchaser on account of failure of the System Integrator or Its Authorized Partner to appraise themselves of local laws and site conditions.

#### **8. Consortium**

Consortium is not allowed.

#### **9. Sub-Contracting of Scope of Work activities**

- The System Integrator or Its Authorized Partner can have one level of sub-contracting for only limited activities like civil work, laying of data and power cabling, air conditioning and mounting of

equipment etc., all related to product installation and commissioning. The System Integrator or Its Authorized Partner would have to provide details of sub-contracting of the above activities if any as part of the technical bid in the form of relevant documentary evidence

- All other activities not mentioned explicitly in the clause above cannot be subcontracted by the System Integrator or Its Authorized Partner.
- **In an appendix to the technical bid clearly marked as Sub-contracts all details of sub-contracting should be provided.**

#### **10. Late Bids**

Any bid received by the Purchaser after the prescribed date and time for receipt of bids will be rejected. All bids need to be submitted on the e-procurement portal.

#### **11. Modification and Withdrawal of Bids**

- No bid may be altered/modified subsequent to the closing time and date for receipt of bids. Unsolicited correspondences from System Integrator or Its Authorized Partner s will not be considered.
- No bid may be withdrawn in the interval between the last date for receipt of bids and the expiry of the bid validity period specified by the System Integrator or Its Authorized Partner in the Bid. Withdrawal of a bid during this period may result in forfeiture of System Integrator or Its Authorized Partner's EMD.

#### **12. Address for Correspondence**

The System Integrator or Its Authorized Partner shall designate the official mailing address, place, email and fax number to which all correspondence shall be sent by the Purchaser.

#### **13. Contacting the Purchaser**

- No System Integrator or Its Authorized Partner shall contact the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.
- Any effort by a System Integrator or Its Authorized Partner to influence the Purchaser's bid evaluation, bid comparison or contract award decision may result in rejection of the System Integrator or Its Authorized Partner 's bid.

#### **14. Opening of Technical Bids by Purchaser**

**15.** The technical bids will be opened from the eprocurement portal.

When deemed necessary, during the tendering process, the Purchaser may seek clarifications or ask the System Integrator or Its Authorized Partner s to make technical presentations on any aspect from any or all the System Integrator or Its Authorized Partner. However, that would not entitle the System Integrator or Its Authorized Partner to change or cause any change in the substance of the tender submitted or price quoted.

## 16. Eligibility

S. No.	Basic Requirement	Specific Requirements	Documents Required
1.	Legal Entity	The System Integrator or its authorized partner should be a company registered under the Companies Act,1956/2013 and should be in the business for more than 5 years.	Copy of Certificates of incorporation
2.	Financial: Turnover	Average Annual Turnover of the System Integrator or its authorized partner during the last three financial years, i.e., for 2017-2018 2018-2019 and 2019-2020 (as per the last published audited balance sheets), should be at least Rs. 30 Crores	CA Certificate with CA's Registration Number/ Seal
3.	Financial: Net Worth	The net worth of the System Integrator or its authorized partner, for FY 2019-20 should be Positive.	CA Certificate with CA's Registration Number/ Seal
4.	Tax registration	The System Integrator or its authorized partner, should have a valid registered number of GST	Copies of relevant certificates of registration
5.	Certifications	The System Integrator or its authorized partner, must possess, at the time of bidding, a valid ISO 9001:2008/2015 Certificate or ISO 20000 Certificate	Copy of a valid certificate
6.	Mandatory Undertaking	The System Integrator or its authorized partner has to submit an undertaking that no Government / undertaking organizations have blacklisted The System Integrator for any reason	Undertaking by Bidder
7.	Technical Capability - I	<p>The System Integrator or its authorized partner</p> <p>a. 'two contracts of Build/ Upgradation/maintenance of Data Centre with 15 or more IT racks of 20kW each or 350 or more Servers each of 1100W' at different locations or</p> <p>b. 'one contract of Build/ Upgradation/maintenance of Data Centre with 70 or more IT racks or 500 or more Servers'</p> <p>during the last 5 (Five) years. The built/ upgraded Data Centres with Certification /compliance for Tier-III/Rated-3 or above will only be considered for evaluation. The System Integrator should clearly highlight the status of each facility (own-use OR co-hosting OR third party) furnished</p>	<p>Completion certificate from the client clearly specifying the details to ensure compliance to this criterion</p> <p>OR</p> <p>b) Certificate from Company Secretary mentioning all the details to ensure compliance to this criterion</p> <p>c)Undertaking letter from Meity</p>



S. No.	Basic Requirement	Specific Requirements	Documents Required
		c. In case of MeitY empanelled in-house Data Centre service provider having Data Centre facility of with 70 or more IT racks of 500W or more Servers' during the last 5 (Five) years. The built/ upgraded Data Centres with Certification /compliance for Tier-III/Rated-3 or above will only be considered for evaluation.	Empanelled service provider declaring the capability of the Data Centre
8.	Technical Capability - II	The System Integrator or its authorized partner should have completed at least one single order with SITC/Maintenance of minimum 300A bus ducts and with SITC of minimum 500KVA DG Sets 3 nos during the last Seven (7) years, in India.  Or  In case of MeitY empanelled in-house Data Centre service provider having in house Data Centre facility having 500A bus ducts and with SITC of minimum 500KVA DG Sets 3 nos during the last Seven (7) years, in India.	Work Completion Certificates from the client/PMC;  Or  Undertaking letter from Meity Empanelled service provider declaring the capability of the Data Centre
9.	Manpower Strength for	The System Integrator or its authorized partner must have on its roll at least 5 technically qualified professionals having relevant degree/diploma for his position in Civil/Electrical/Mechanical	Self-Certification by the authorized signatory or HR department.
10.	Certified Resources with min. 5 years of experience in Data Center	As on 1st September 2022 , the bidder must have on their Pay roll in India, minimum of 5 (five) qualified DC certified professionals having certification of CDCP. Three should have minimum experience of 5 Years with the same organisation (Bidding firm) and the balance two professionals should have min 6 Months experience with the same organisation (Bidding firm)	Bidder need to submit the necessary certifications along with proof showing the professional is with the bidder on pay roll and PF challans of the same need to be submitted.
11.	Project Management Professionals	Bidder on its pay roll should have at least 3 (three) PMP (Project Management Professionals) as on 30 September 2021	Necessary Certificate must be submitted

## **Rejection Criteria**

Besides other conditions and terms highlighted in the tender document, bids may be rejected under following circumstances: subsubsection General Rejection Criteria

- Bids submitted without or improper EMD.
- Bids received through Telex/Telegraphic/Fax/E-Mail/ except, wherever required, will not be considered for evaluation.
- Bids which do not confirm unconditional validity of the bid as prescribed in the Tender.
- If the information provided by the System Integrator or Its Authorized Partner is found to be incorrect/misleading at any stage/time during the Tendering Process.
- Any effort on the part of the System Integrator or Its Authorized Partner to influence the bid evaluation, comparison or contract award decisions
- Bids received by the Purchaser after the last date for receipt of bids prescribed by the Purchaser.
- Bids without signature of person (s) duly authorised on required pages of the bid.
- Bids without power of authorisation consisting of adequate proof of the ability of the signatory to bind the System Integrator or Its Authorized Partner.

### **2.17.1 Technical Rejection Criteria**

- Technical Bid containing commercial details.
- Revelation of Prices in any form or by any reason before opening the Commercial Bid.
- Failure to furnish all information required by the Tender Document or submission of a bid not substantially responsive to the Tender Document in every respect.
- System Integrator or its Authorized Partners not quoting for the complete scope of Work as indicated in the Tender documents, addendum and any subsequent information given to the System Integrator or Its Authorized Partner.
- System Integrator or its Authorized Partners not complying with the Technical and General Terms and conditions as stated in the Tender Documents.
- The System Integrator or Its Authorized Partner not confirming unconditional acceptance of full responsibility of providing services in accordance with the Section 3 and Section 5 of this tender.
- Responses by the System Integrator or Its Authorized Partner not confirming to the requirements specified in this tender.
- If the bid does not confirm to the timelines indicated in the bid.
- If the design for any work package is found inappropriate/impractical.

### **2.17.2 Commercial Rejection Criteria**

- Incomplete Price Bid
- Total price quoted by the System Integrator or Its Authorized Partner does not include all statutory taxes and levies applicable.

- If there is an arithmetic discrepancy in the commercial bid calculations the Purchaser shall rectify the same. If the System Integrator or Its Authorized Partner does not accept the correction of the errors, its bid may be rejected.
- If the “priced” BOQ does not match the “unpriced” BOQ (see Section 2.19.4).

## 2.18 Evaluation criteria: CQCCBS

The evaluation will be based on a **Combined Quality Cum Cost Based System (CQCCBS)**.

1. There will be 70% weightage for technical evaluation and 30% weightage for commercial evaluation.
2. The marking scheme for technical evaluation is given below in Section 2.18.1.
3. The proposal with the lowest score will be given a financial score of 100 and the financial scores of the other proposals will be computed inversely proportional to their prices. For example, if there are three proposals with costs 110, 100 and 120, then their financial scores will be  $100 \times 100 / 110$ , 100, and  $100 \times 100 / 120$  respectively.

### 2.18.1 Technical marking scheme

1. Past Experience of the System Integrator or Its Authorized Partner Maximum 10 marks
  - Experience of the System Integrator or Its Authorized Partner in executing work similar in size and scope to what has been specified in this tender.
  - Experience in Design, Site Preparation, Supply, Installation, Testing, commissioning, Operations and Maintenance of Basic Infrastructure.
2. Approach and Methodology of implementation. Maximum 5 marks
  - Understanding of Scope of Work and Requirements
  - Level of details captured in the Solution Design
  - Implementation Methodology adopted including processes and project implementation plan.
  - Quality monitoring and assessment methods.
  - Safety standards.
  - Testing and site acceptance methodology.
  - Manpower to be deployed.
3. Approach and Methodology of Operations/Maintenance Maximum 10 marks
  - Understanding of Scope of Work and Requirements
  - Operations/Maintenance Methodology proposed
  - SLA and problem resolution methods to be deployed.
  - Manpower to be deployed (including qualifications).
4. Data Centre Layout Maximum 5 marks
  - Has System Integrator or Its Authorized Partner optimally utilized available floor space to accommodate required no of racks?

- How efficiently System Integrator or Its Authorized Partner has placed the racks in between the beams and utilized available height?
- Has System Integrator or Its Authorized Partner optimally utilized available floor space to accommodate support areas in available space?
- How efficiently the available space is utilized for laying out the Cables, pipes and ducts?

5. Electrical System Maximum 20 marks

- Power Requirement
  - Electrical SLD with breakers, equipment and control details for complete power distribution up to IT rack level.
  - Solution considered for grounding/earthing.
  - What is the solution considered for power continuity for air-conditioning critical components to maintain the air flow within Data Centre at the time of power failure?
  - What is the solution, design and best practices for the following:
    - \* DG system
    - \* Lighting and emergency lighting
    - \* LT power distribution, PDUs
    - \* Others
  - Power consumption efficiency - How efficient is the conversion of raw power into usable power?
  - Estimated Electricity consumption each year
  - How quickly DG sets come on-line automatically after AC mains failure? (Maximum requirement - 30 seconds)
- UPS
  - Efficiency of UPS running at partial load
  - Noise level generated by UPS (Maximum 65 dB 1 meter away) – Compliance with Standards like IEC, EN or equivalent.

6. HVAC Maximum 20 Marks

- How well the System Integrator or its Authorized Partner has grasped the design philosophy and the design approach as described in the RFP and adopted that in their Design?
- ASHRAE standards for Class A1 Data Centre must be followed and met by the HVAC system.
- What is the solution, design and best practices adopted for the following:
  - HVAC systems for the Data Centre.
    - Server room cooling.
    - Cooling for other areas.
- How efficiently is the HVAC system designed to cater to varying load requirements within Data Centre?
- Methodology proposed by the System Integrator or its Authorized Partner to ensure the HVAC system is able to function in the event of a duty equipment failure. In short have they eliminated all single point of failures in design?

- What are the worst-case climate conditions considered?
- Have the weather data and building architecture (including and not limited to the relative humidity and the dew points) been considered in the estimation of the maximum building cooling load? The System Integrator or its Authorized Partner must provide detailed load calculations and building energy simulations on an annual basis.
- Computational fluid dynamics (CFD) analysis within Data Centres must be provided given the rack geometry and building specifications.
- The System Integrator or its Authorized Partner must provide for “free cooling” and “pre-cooling” capabilities to reduce the direct HVAC energy consumption.
- The System Integrator or its Authorized Partner must install detailed instrumentation for monitoring the complete system performance in terms of key parameters and a real-time calculation of the Power Usage Effectiveness (PUE). The instrumentation should follow ASHRAE guidelines for building management systems (BMS).
- The System Integrator or its Authorized Partner must provide capability of thermal energy storage (sensible or latent storage) to provide uninterrupted cooling during a power failure or for the time duration in which the backup power comes on. The thermal energy storage system should provide cooling for 10 minutes in the event of a power failure.

7. Power Usage Effectiveness (PUE) Maximum 10 marks

- PUE Level-3 (Advanced Monitoring) must be implemented. PUE Level-3 includes IT-equipment power measured at the server, and total-facility power is data-centre input power minus shared HVAC plus building, lighting, and security-power loads. Measurement frequency is continuous.
- As per solution proposed by Bidder, what is the design and expected estimated PUE for 40%, 50%, 75% and 100% IT load.
- Hourly PUE analysis should be included.
- The System Integrator or its Authorized Partner must provide a detailed calculation of annualized PUE (should be less than 1.45). New and alternative designs (free-cooling chiller, etc.) can also be considered.

8. Civil Design and works of the Data Centre. Maximum 10 marks

- How efficiently has the false flooring been designed?
- Does the design ensure safe load distribution, that is, ensuring that the maximum floor load due to the equipment including additional flooring and civil works is less than 400 kg/m<sup>2</sup>? Demonstrate with the detailed load distribution as per the proposed design.
- Does the design ensure uniform load distribution to the existing flooring of the building? Demonstrate with the design details.
- Does the design of the Data Centre ensure that the structural members such as beams, columns, and slabs of the existing building will not be chiselled, damaged, perforated, or tampered?

9. Safety, Security & Management System Maximum 10 marks

The solution, design and best practices adopted for the following:

- Analogue addressable fire alarm system
- Automatic gas-based fire suppression system
- Smart card-based access control system
- CCTV surveillance system
- Water leak detection system
- Rodent repellent
- Integrated BMS and DCIM

10. Real-time measurement      Maximum 10 marks

- Details of sensors to be deployed.
- Calibration of sensors and frequency of calibration.
- Adherence to ASHRAE/TGG 2009 Real time energy consumption measurements in Data Centre guidelines (best practices).
- Integration with BMS/DCIM.

Only technical bids receiving a score greater than or equal to a cut-off score of 70% with a minimum of 80% percent marks in each of HVAC, Electrical systems and PUE, and a minimum of 50% marks in each of the individual remaining parameters will be considered for further evaluation.

## 2.19 Technical solution description

Bidders are requested to submit the technical design and solution strictly as per the following guidelines.

### 2.19.1 Technical summary sheet

Bidders need to prepare a technical summary sheet according to the following format.

(Please click to download).

### 2.19.2 Design and solution outline

There should be a section with title **Design and solution outline** where the bidders should provide a brief description of the design choices and the proposed solution separately for the **Data Centre**. All codes and standards adhered to should be mentioned. There should be the following subsections clearly marked out.

- Civil construction
- Data Centre load estimation.
- HVAC and cooling solution for server area.
- Basis and methods used for hourly calculation of PUE at various load factors.
- Cooling solution for utility areas.
- Electrical solution with separate subsections for DG, electrical panels, UPS and power distribution.
- DCIM and BMS.
- Fire detection and suppression system.
- Alarm systems

- Rodent control system.
- Water leak detection system.
- Surveillance and access control systems.
- Others

There should be no OEM data sheets, product description slides etc. in this section. Figures, if required, should be incorporated into the section document.

For each component of the solution references should be made to the **detailed specifications** as required in Section 2.19.3 along with page numbers.

### 2.19.3 Detailed specifications

There should be a separate section with title **Detailed specification** where the detailed specifications, under the same section numbers under Section 3, should be provided for each component.

The detailed specification for each component should clearly mention

- All technical quality and safety standards adhered to.
- Guidelines to be followed.
- Details of materials to be used, including thickness of components, paints, labelling to be provided etc.
- Operating conditions.
- Best practices to be followed.

Technical data sheets from OEMs should not be included in this section but should be provided in clearly marked appendices to this section.

For each component a reference should be made to the detailed bill of quantities (BOQ) table required in Section 2.19.4 and to the OEM data sheets clearly mentioning the page numbers.

### 2.19.4 Priced and unpriced bill of quantities (BOQ)

- 1.The submitted BOQ should be complete in all respects.
- 2.The bidders should ensure that all components are accounted for in both the “unpriced” and “priced” BOQs. The bidder, if selected, will have to provide any missing component at own cost.
- 3.All line items in the “priced” BOQ must also appear in the “unpriced” BOQ.

The “priced” BOQ must have the process quoted both in figures and words, and in case of any discrepancy, the amount quoted in words will be taken as correct. The **Technical bid** should include an unpriced BOQ (in tabular form) in a section clearly marked as **Unpriced BOQ**. The BOQ table should be divided in to following sections.

Please include “installation” as line items in the BOQ wherever necessary. The provided BOQ is indicative. Any additional items may be added to the miscellaneous sheet, with the description provided in the bid. Any change in the provided BoQ must be clearly mentioned.

### **2.19.5 Operation and Maintenance**

In a section clearly marked as **Operations and maintenance** please provide information regarding:

- Operational procedures to be used.
- Routine preventive maintenance schedule to be followed for each component of the Data Centre.
- SLA and problem resolution methods to be deployed.
- Manpower to be deployed (including qualifications).

### **2.19.6 Bidder's credentials**

In a section clearly marked as **Bidder's credentials** please provide the following information.

- List of all Data Centre built in India in the last five years including location, power rating, server farm area, number of populated racks, annualised PUE information and the cooling solution used.
- List of all Data Centre where Operations and maintenance activity has been carried out by the bidder including period, uptime ensured, manpower deployed (number), penalty faced.

### **2.19.7 Project execution methodology**

In a section clearly marked as **Project execution methodology** please provide the following information regarding:

- Project execution timeline.
- Project execution methodology to be adopted.
- Project management processes to be followed.
- Quality monitoring and assessment.
- Safety standards to be followed.
- Manpower to be deployed.
- Coordination with IIT Delhi.
- Testing methodology.
- Suggested method for site acceptance testing.

### **2.19.8 Sub-contracts**

In an appendix to the technical bid clearly marked as **Sub-contracts** all details of subcontracting should be provided.

## **3 Scope of work and brief technical requirements**

This section describes the scope of work and brief technical requirements. Bidders are required to work out the details and submit, along with the solution, complete detailed specifications of each component. Bidders should submit, with the same section numbering as follows, the detailed specification of each item and



specify all standards that are adhered to. OEM data sheets, as applicable, should be submitted as separate appendices to this section.

**3.1 The envisaged IT load for the data centre: see table under “Sizing and technology options”**

**3.2 Data Centre layout**

**3.2.1 Data Centre**

The area identified for the proposed Data Centre is approximately 1188sq. feet on the 3<sup>rd</sup> floor of the Sonipat campus main building. The approximate floor to ceiling height of the proposed Data Centre area is 13.5 feet. It is proposed to provision for the following services in the proposed Data Centre. The live load on the third floor is 0.5 T/m<sup>2</sup>; for the terrace is 0.4 T/m<sup>2</sup>.

- 1.Main Data Centre containing server farming area, space for Data Centre networking equipment and precision air condition systems.
- 2.Network room for terminating all ISP connections.
- 3.UPS and battery rooms.
- 4.Combined NOC and BMS room.
- 5.Electrical room.
- 6.Space for housing fire fighting equipment

An indicative floor plan is provided in Figures 1, 2, 3 and 4.

Figure 1: Campus Layout

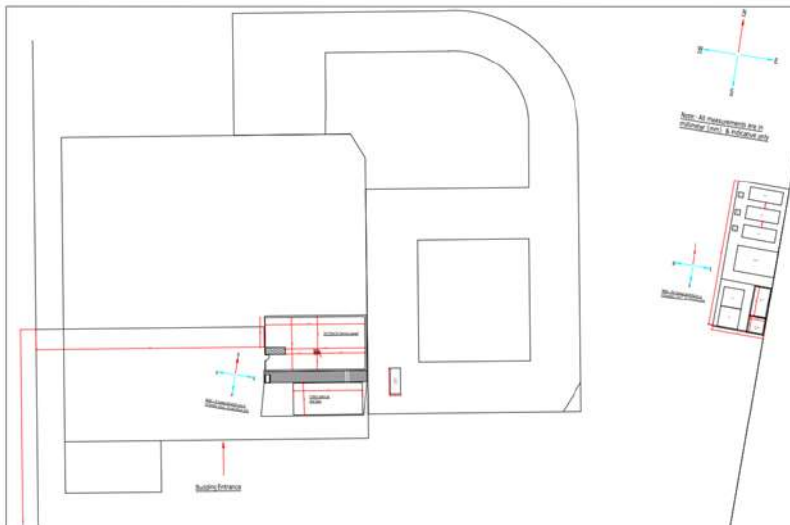


Figure 2 : Data Centre Layout

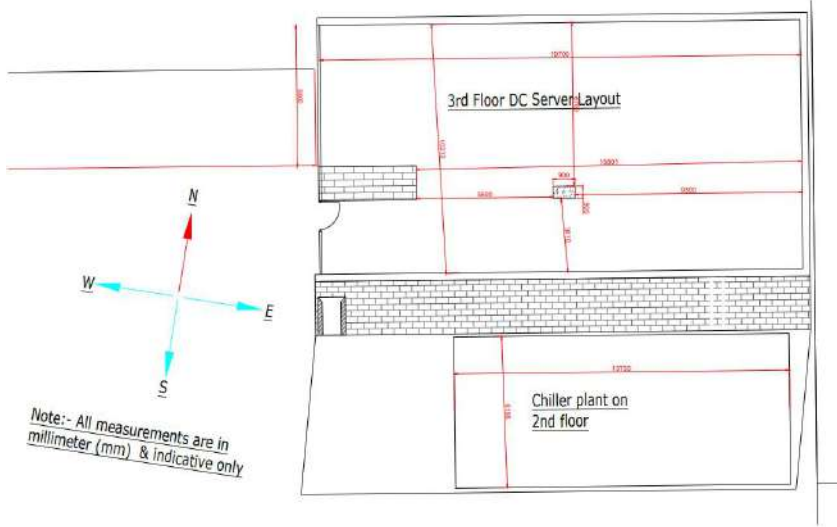
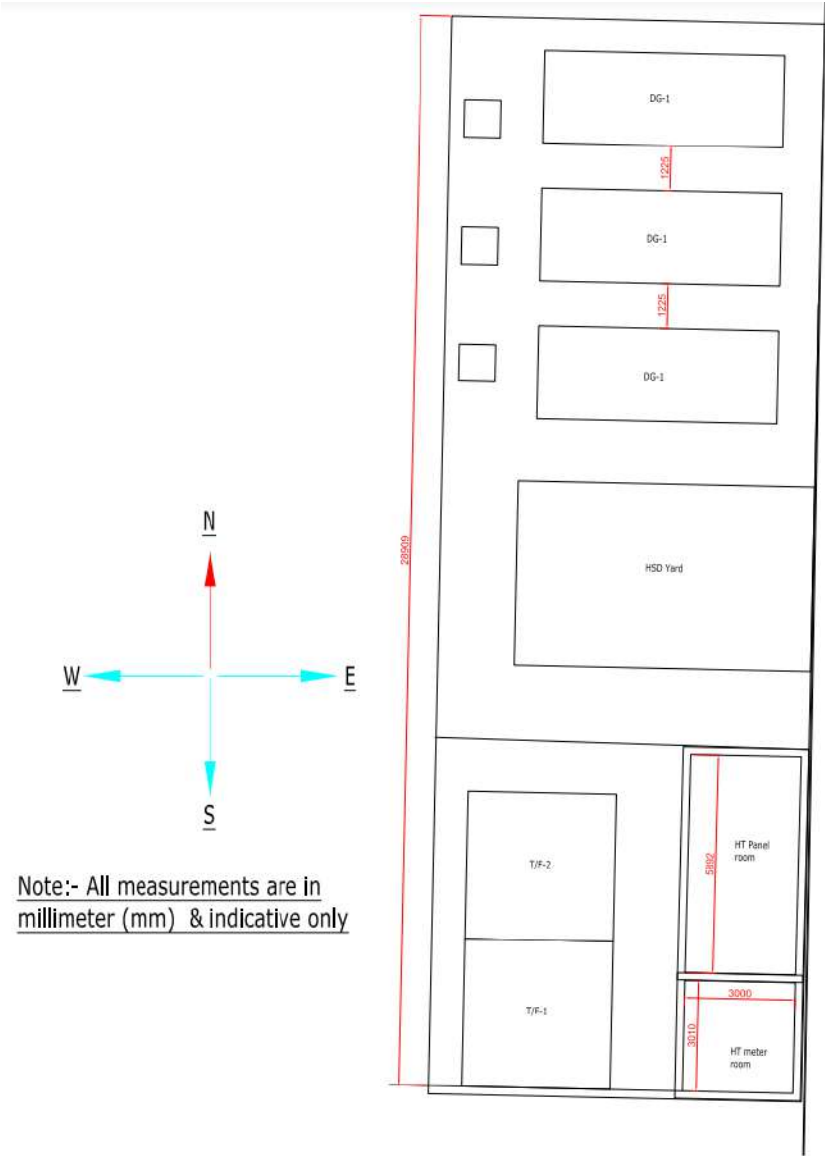


Figure 3:HT & DG Yard



Dimensions of the Data Centre (to be filled by the bidder)

S. No	Description	Length	width	Area (sq. feet)
1	Server Farm area			
2	NOC Room			
3	BMS Room			
4	Electrical room-1			
5	Electrical room-2			
6	Chiller Plant area			
7	HT and DG Area			

### 3.2.2

### 3.3 Civil architecture and preparation of Data Centre: scope of work

The scope of the civil work will include site preparation and dismantling and disposal of necessary non-load bearing partitions and old air conditioning ducts. It will also include provisions for raised flooring and false ceiling. The following describes the scope of the work.

**Civil work required for the ensuring safe load distribution in the building for cooling and related equipment:** Construction of pedestals above existing columns to support MS beams for the installation of equipment, including but not limited to, chillers, economisers, water treatment plants etc. of the building shall be carried out by the contractor. The item includes removal of existing finishing, provision of polymer bonded dowels to existing columns, concreting for construction of pedestals, anchoring and erection of MS beams sufficient in capacity to support the equipment and any waterproofing/repair required. Any additional work that may be required for a structurally safe installation of equipment on the roof will also be in the scope. The contractor shall be responsible for removal of all waste/malba from the premises of IIT Delhi.

**Civil work required for the ensuring safe load distribution in the building for the data center, UPS, and related equipment:** The civil works for the Data Centre should be designed ensuring that the existing structural members such as beams, columns, or slabs are not tampered, perforated, damaged, or chiselled. The total design load including the civil work, that includes false flooring and any other additional features, should be less than 400 kg/m<sup>2</sup>. Any additional work that may be required for a structurally safe installation of equipment will also be in the scope. The contractor shall be responsible for removal of all waste/malba from the premises of IIT Delhi.

**Installation of equipment:** The installation and commissioning of all equipment in the building has to be carried out by the contractor. This includes, but is not limited to, the anchoring of the equipment to the strengthening system created in the building, any system to be provided for the protection of the equipment from the environment.

Details of all equipment to be installed, including their dead and operating weight, including the weight of any additional materials such as water, coolants, oils, etc. required during the normal functioning of the equipment, dimensions, clear distances required, etc. must be provided along with the tender document.

**Demolition and dismantling:** In the area identified for the Data Centre, all existing partitions, furniture, concrete wall structures, false ceiling and AC ducts, electrical and other cables, switches, sockets, plaster and other related material will have to be dismantled and disposed off in a safe and systematic way minimising disturbance to the adjoining library area.

**Data Centre outer and inner structure:** The structure of the entire Data Centre should be converted to be **2 hour fire rated**.

**False flooring and ceiling:** Suitable raised false flooring and false ceiling as per prevailing standards should be provided at the Data Centre as per site requirements. The weight of the equipment should be transferred as uniformly as possible to the existing flooring of the building, avoiding any high point loads.

**Partition walls:** Partition walls within the Data Centre should have 2-hour fire rating. The walls and columns of the utility rooms should have adequate thermal insulation. Suitable smoke seals should be used with double doors. Fire rated vision panels will have to be provided at suitable locations.

### **3.4.1 DG sets for the Data Centre**

#### **Diesel Generator**

**Rating / Sizing: (to be filled by bidder)**

#### **Scope of Work**

1. Supply of Diesel Generator systems Unloading, shifting, Storing, Installation, Testing and Commissioning
2. Supply and installation of Exhaust stack
3. Periodic maintenance
4. SLA adherence  
Repair and Replacement if required

**ANNEXURE-I**

Sl. No	Requirement	Compliance (Fully or better complied/ Partially complied/Not complied)	Remark (If any)
<b>Mandatory Technical Requirements</b>			
1	Voltage regulation: Random and no load to full load condition = +/- 1%		
2	Engine Design must be multi cylinder, V block Turbo charged		
3	Standard engine cooling system by 50 °C ambient radiator.		
4	Alternator design to be brushless, 4 pole, rotating field.		
5	Exciter must be PMG/AREP type.		
6	Microprocessor based integrated control system providing voltage regulation, engine and Alternator protection, operator interface and Isochronous governing.		

**Underground diesel tank and fuel feeling system**

**Rating / Sizing: (to be filled by bidder)**

**Scope of work**

1. Supply and installation of the UG tank of capacity of 10000L and Day tank of 990L with each Generator
2. Supply installation testing of the auto and manual fuel filling system (UG tank to DG day tank) with redundancy pump.

## ANNEXURE-I

Sl. No	Requirement	Compliance (Fully or better complied/ Partially complied/Not complied)	Remark (If any)
<b>Mandatory Technical Requirements</b>			
1	Pumps shall be flame proof with redundant pump		
2	Fuel filling system shall fully auto and manual operational according to DG day tank low and high level		
3	UG tank to day tank distance should be placed as per NFPA guideline.		
4	Fuel pump on/OFF and Panel operation should be monitored with the BMS System		
5	DG day tank and UG tank level should be monitored in the BMS System		
6	UG tank and fuel piping should be standard as per fuel storage guideline.		

### 3.4.2 Power supply to the Data Centre

- To achieve high power availability a 1+1 solution with two independent power paths should be designed. All equipment such as cables, LT breakers etc. should also be in a 1 + 1 configuration. Each path should be able to carry the full Data Centre load independently.
- There should an independent feeder for the server room. The power source for AC and other equipment should be separated from that of the server room.
- Voltage drop from DG up to LT changeover panel should not be more than 2%; from LT panel to Non-IT equipment not to exceed 3%; from UPS panels to racks, voltage drop not to exceed 2%.

ANNEXURE-I

3.4.3 Electrical Panels

Sl. No	Requirement	Compliance (Fully or better complied/ Partially complied/Not complied)	Remark (If any)
<b>Mandatory Technical Requirements</b>			
1	The main distribution boards shall be of standard, natural air cooled, well tested and proven design which ensures maximum safety to personnel, maximum service reliability and economic operations for a lifetime of at least 15years. Design and construction shall be simple, well laid- out and shall provide good accessibility to components and parts.		
2	Unless specified otherwise, the form of construction for the main distribution board shall comply with Form-3b requirements of IEC 61439-1. And 2		
3	The electrical system for all main distribution boards shall be 415 / 380V, 50 Hz 3phase and neutral, 4-wire solidly earthed. The main distribution boards shall be suitable for operating voltage up to 690 V and Insulation voltage of 1000V		
4	All incomer lines and major outgoing lines must have multifunction meter that measures all the parameters including harmonics till 15 level. Such incomers ad outgoings must have indications for phases and On, OFF, TRIP, breaker control switch etc.		
5	Distance between the bus bar supports for bus bar system and the distance between different phases of bus bar system shall be as per manufacturer guidelines based on the type test results.		



Sl. No	Requirement	Compliance (Fully or better complied/ Partially complied/Not complied)	Remark (If any)
6	The bus bar system shall be designed as per the pre-defined guidelines provided by the original manufacturer.		
7	Unless specified otherwise, Main distribution boards shall be designed for front access for the purpose of operation and access to all components and shall suit front or rear access for cable connections and top or bottom for cable entries		

#### 3.4.4 Busbars

The Busbar Trunking System shall be of sandwich construction, non-ventilated and natural cooled design. It shall be possible to mount the Busbar Trunking System in any orientation without affecting the current rating. All panel bus bar should be 100% non-sleeves. Bus bar from UPS outgoing panel and onward should be of copper.

#### 3.4.5 Circuit breakers

There should be provision for adequate circuit breakers for handling in-rush and surge current to the equipment in addition to normal operating current. Each equipment should be provided a separate circuit with a circuit breaker which should be properly labelled in a single line diagram (SLD). Circuit breakers should be as per IEC 60947.

#### 3.4.6 Power connectors

Power connectors for the server room should conform to prevailing standards. The placement of the power connectors should be properly planned both for redundancy and proximity.

#### 3.4.7 Emergency power cut-off switch

There should be a cut-off switch to disconnect power from all computing equipment in the Data Centre. There should be a proper reset mechanism and safety mechanism against accidental operation. It should be located in the path between the MCB and the UPS.

#### 3.4.8 Automatic transfer switch

A high availability redundant automatic transfer switch with overlapped neutral should be provided to switch from primary AC source to the redundant source. It should provide redundant power supply to all equipment.

## ANNEXURE-I

## 3.4.9 UPS and battery

Sl. No.	Particulars	Specifications Required	Vendor Compliance
1.00	Scope	<p>The specification aims for the procurement of 2 Sets of UPS with appropriate capacity with 3 Phase input and 3 Phase plus Neutral (N) out put in N+ N configuration, On Line double conversion VFI Technology, fully microprocessor controlled &amp; fully digital UPS Systems along with Lithium Ion Batteries (LIB) for Minimum 10 Minute end of life back up with each UPS at unity PF Load complete with accessories Like battery Housing closed racks, inter-cell and inter module connectors, Battery circuit breaker panel, BMS for cell level and Module level monitoring, and DC cable between UPS &amp; Battery Banks (minimum 15 Mtrs. Distance between UPS &amp; battery banks).</p>	
1.10	General Description	<p>The system should be very reliable and easy to use. It should have a front panel LCD display making monitoring of various parameters and health of system easy.</p> <p>Microprocessor base digital controls are provided in the UPS system, that controls all the internal parameters, thus increasing reliability and performance of the system. In parallel connections, digital controls should ensure balance of the currents.</p> <p>System design should be such that it can be connected in parallel even after the installation of the first unit without shutting down running unit (hot insertion) similarly it should be possible to take out one unit for maintenance from parallel group without effecting other running units. Parallel UPS systems should have redundant communications cables and cards so that if one communication cable fails systems can work in parallel.</p>	
1.2	Galvanic isolation of neutral	UPS System should have inbuilt or external 1:1 Delta-Star isolation transformer at inverter output.	

		System should be capable of On-Line double conversion operating of 3 phase input supply while providing 3 Ph+N output supply to connected loads. Being in Parallel Dual bus configuration bypass operation should be disabled (bypass enable & disable feature should be there as standard in system).	
1.3	Compliance to Standards like IEC, EN, CE UL etc.	UPS System performance, safety and EMC EMI compatibility must be in compliance with relevant standards Like IEC, EN, IEEE. (IEC 62040-1, 2 & 3), CE or UL Certified.	
		<b>FOLLOWING DETAILS MUST BE FIELD BY VENDORS</b>	
2	UPS INPUT		
	Rectifier Type	Latest 4th generation IGBT Rectifier	
	a) Voltage	380-400-415 V three-phase (Selectable)	
	b) Input Voltage tolerance	320V-480V or better	
	c) Input Frequency tolerance	45 - 55 Hz	
	d) Synchronisation range to bypass	Selectable from +/-1% to +/-5% from the front panel	
	e) Current distortion (iTHD)	<3% at 100% Load & < 6% at 50% Loads	
	f) Power factor	0.99 from 25% Load to 100%	
	g) Soft start (Power Walk in)	0 - 100% load in minimum 0-120 Seconds configurable from front panel	
	h) Input phases	3-Phase with or without Neutral On-Line double conversion Operation	
	i) - Input Phase Sequence correction	UPS must have inbuilt input phase sequence correction and protection feature	
3	BATTERIES & UPS DC Bus		
	a) Type of Batteries	Lithium Ion Batteries (LIB System)	

	b) Approved Makes	Samsung / LG / Panasonic	
	c) DC Ripple current	Should be <1%	
	d) Temperature compensation	Battery charging must be temperature compensated (-0.2V/Deg. C) as required by battery	
	e) Battery Charging	Two-level recharging (Configurable) as per EN 50272-2	
	f) Battery Test	Periodical Automatic (on-line testing) & Manual both should be available	
	g) Protection against slow discharge	Required	
	h) Protection against deep discharge	Required	
	i) UPS DC bus	Vendor to Specify-	
4	UPS OUTPUT		
	a) Rated power	As per BOQ (As per Design Load above)	
	b) Active Power	UPS out put must be rated @Unity PF	
	d) output Waveform	Sinusoidal	
	f) Voltage distortion with distorting non-linear load (vTHD)	minimum <5%	
	Voltage Distortion at linear Load (vTHD)	minimum <1%	
	h) Frequency	50/60 Hz configurable	
	i) Dynamic stability	(+/- 5% in 20 msec)	
	j) output Voltage Static stability	(+/- 1%)	
	k) Crest factor (I <sub>peak</sub> /I <sub>rms</sub> )	minimum 3:01	
	l) Output phases	3 + N	
	m) Overload capacities in On-Line Mode	105% continuous; 125% 10Min.; 150% 1 Min. (while working on inverter Mode/On-Line Mode) same should be at ambient Avg. temp of 40 Deg. C	

5	Battery back up & Details		
	Back up	as per BOQ, 10 Minute with supporting battery sizing and battery OEM data sheet.	
	Battery Sizing	should be provided along with Battery OEM supporting discharge data,	
	output PF for battery sizing	Unity ,	
	End cell Voltage	As per LIB requirement	
	AH & No. of battery selected	to be provided for each UPS capacity as per BOQ	
	Warranty	LIB system should have minimum 1 year warranty from installation & commissioning.	
	Weight & Size	weight & size of each Rack to be provided	
	Battery breaker panel should be integrated with LIB system	should be provided with each UPS system	
6	SYSTEM		
	a) AC/AC efficiency On-Line Mode		
	at 100% Load with Isolation trx.	should be minimum 95% with Isolation Transformer	
	at 75% Load with Isolation Trx.	should be minimum 95.3% with Isolation Transformer	
	at 50% Load with Isolation trx.	should be minimum 95.3% with Isolation Transformer	
	at 25% Load with Isolation Trx.	should be minimum 94.5% with Isolation Transformer	
	b) Operating altitude	Up to 1000 m a.s.l (1% derating each 100m from 1000m to 2000m)	

c) Noise	< 85 dBA at 1 Meter	
d) Storing temperature	(-20degree C to +70 degree C (UPS) & - 20 Degree C to +30 Degree C (Batteries)	
e) Operating temperature	0 - 40 degree C (Continuous for 8 Hours), 24 Hours Avg. 35 Deg. C	
f) Relative humidity	<95% non condensing	
g) Remote controls	E.P.O (Emergency Power Off) and bypass	
h) Remote signals	Voltage free contacts ( Total 6 Nos. and should be programable)	
i) Protection Level	IP20 in accordance with standard EN 60529	
j) Communication	standard RS232+ remote contacts+ 2 communications interface slots	
k) Cooling	Forced Air through redundant or multiple cooling Fans (6- 8 Nos. minimum)	
l) Colour	VENDOR SHOULD SPECIFY	
m) Standards	Directives EEC 73/23-93/68-89/336, Safety IEC EN 620401;	
	EMC IEC EN 6204-2; Performance IEC EN 62040-3	
n) Technology	True On-Line double conversion as per IEC EN directive	
o) Weight	To be provided by vender	
p) Dimensions (WXDXH)	To be provided by vender	
q) Classifications as per IEC	VFI-SS-111 in accordance with IEC EN 62040-3	
	(Voltage Frequency Independent)	
r) Static Switch / Static bypass	Static bypass must be provided with provision to enable & dis able as per requirement.	
s)- Maintenance bypass / Service Bypass	Manual maintenance bypass or Service bypass must be inbuilt with each UPS, in case same is not inbuilt external service bypass panel (3 Breaker Panel) must be offered by vendor.	

<b>7</b>	<b>UPS Monitoring and Power Management</b>		
		UPS should have following	
	<b>a</b>	minimum 1 Nos. RS232 Ports	
	<b>b</b>	SNMP (TCP/IP communication with networks)	
	<b>c</b>	Potential free dry contacts for main events (programmable)	
	<b>d</b>	ModBus RTU (RS485) for BMS connectivity	
<b>8</b>	<b>OTHER FEATURES</b>	(System should confirm to following features)	
<b>a</b>	<b>Paralleling</b>	should be suitable for parallel up to 6 Modules	
<b>b</b>	<b>UPS Design for Applications</b>	Suitable for Data centers, Blade servers and sensitive IT equipment	
<b>c</b>	<b>Isolation Transformer</b>	1:1 Delta -Star Isolation Transformer must be inbuilt or external at inverter output to make system more reliable, to provide galvanic isolation between source (UPS) & Loads, to provide protection against DC to connected loads and line noise.	
<b>d</b>	<b>Power Output Loads</b>	0.8 Inductive to 0.9 Capacitive without reducing the Active Power	
<b>e</b>	<b>Backfeed Protection</b>	must be Built-in as standard.	
<b>f</b>	<b>Phase Shift</b>	Phase shift angle 120degree+/-1degree for balanced load and 100% unbalanced load	
<b>h</b>	<b>Parallel Cable Redundancy</b>	100% Redundant parallel communication Cable (Parallel configuration)	

## ANNEXURE-I

## NON-IT UPS Specification

Sl.	Particulars	Specifications Required	Vendor Compliance
1.00	Scope		
1.10	General Description	The system should be very reliable and easy to use. It should have a front panel LCD display making monitoring of various parameters and health of system easy.	
1.2	Galvanic isolation of neutral	UPS System should have inbuilt or external 1:1 Delta-Star isolation transformer at inverter output. System should be capable of On-Line double conversion operating of 3 phase input supply while providing 3 Ph+N output supply to connected loads. Being in Parallel Dual bus configuration bypass operation should be disabled (bypass enable & disable feature should be there as standard in system).	
1.3	Compliance to	UPS System performance, safety and EMC	
		FOLLOWING DETAILS MUST BE FILLED BY VENDORS	
2	UPS INPUT		
	Rectifier Type	Latest 3/4th generation IGBT Rectifier	
	a) Voltage	380-400-415 V three-phase (Selectable)	
	b) Input Voltage	320V-480V or better	
	c) Input	45 - 55 Hz	
	d)	Selectable from +/-1% to +/-5% from the	
	e) Current	<3% at 100% Load &< 6% at 50% Loads	
	f) Power factor	0.99 from 25% Load to 100%	
	g) Soft start	0 - 100% load in minimum 0-120 Seconds	
	h) Input phases	3-Phase with or without Neutral On-Line	
	i) - Input Phase Sequence correction	UPS must have inbuilt input phase sequence correction and protection feature	
3	BATTERIES & UPS		
	a) Type of Batteries	Lithium Ion Batteries (LIB System)/SMF Batteries	
	b) Approved	Samsung / LG / Panasonic	
	c) DC Ripple	Should be <1%	
	d) Temperature compensation	Battery charging must be temperature compensated (-0.2V/Deg. C) as required by battery	



	e) Battery Charging	Two-level recharging (Configurable) as per EN 50272-2	
	f) Battery Test	Periodical Automatic (on-line testing) & Manual both should be available	
	g) Protection against slow discharge	Required	
	h) Protection against deep discharge	Required	
	i) UPS DC bus	Vendor to Specify	
	j) Backup	Minimum 10 Minute end of life back up	
4	UPS OUTPUT		
	a) Rated power	As per description above	
	b) Active Power	UPS output must be rated @Unity PF (i.e minimum 500KVA=500KW)	
	d) output	Sinusoidal	
	f) Voltage	minimum <3%	
	Voltage	minimum <1%	
	h) Frequency	50/60 Hz configurable	
	i) Dynamic stability	(+/- 5% in 10 msec )	
	j) output Voltage Static stability	(+/- 1% )	
	k) Crest factor	minimum 3:01	
	l) Output phases	3 + N	
	m) Overload capacities in On-Line Mode	105% continuous; 125% 10Min.; 150% 1 Min. (while working on inverter Mode/On-Line Mode) same should be at ambient Avg. temp of 40 Deg. C	
5	Battery Details		
	Back up	10 Minute with supporting battery sizing	
	Battery Sizing	should be provided along with Battery OEM	
	output PF	Unity ,	
	End cell Voltage	As per LIB requirement	
	AH & No. of battery selected	to be provided for each UPS capacity as per BOQ	
	Warranty	LIB system should have minimum 1 year warranty from installation &	
	Weight & Size	weight & size of each Rack to be provided	

	Battery breaker	should be provided with each UPS system	
6	SYSTEM		
	a) AC/AC		
	at 100% Load with Isolation trx.	should be minimum 95% with Isolation Transformer	
	at 75% Load with Isolation Trx.	should be minimum 95.3% with Isolation Transformer	
	at 50% Load with Isolation trx.	should be minimum 95.3% with Isolation Transformer	
	at 25% Load with Isolation Trx.	should be minimum 94.5% with Isolation Transformer	
	b) Operating altitude	Up to 1000 m a.s.l (1% derating each 100m from 1000m to 2000m)	
	c) Noise	< 78 dBA at 1 Meter	
	d) Storing temperature	(-20degree C to +70 degree C (UPS) & - 20 Degree C to +30 Degree C (Batteries)	
	e) Operating	0 - 40 degree C (Continuous for 8 Hours), 24	
	f) Relative	<95% non condensing	
	g) Remote	E.P.O (Emergency Power Off) and bypass	
	h) Remote signals	Voltage free contacts ( Total 6 Nos. and	
	i) Protection Level	IP20 in accordance with standard EN 60529	
	j) Communication	standard RS232+ remote contacts+ 2 communications interface slots	
	k) Cooling	Forced Air through redundant or multiple cooling Fans (6- 8 Nos. minimum)	
	l) Colour	VENDOR SHOULD SPECIFY	
	m) Standards	Directives EEC 73/23-93/68-89/336, Safety EMC IEC EN 6204-2; Performance IEC EN	
	n) Technology	True On-Line double conversion as per IEC	
	o) Weight	To be provided by vender	
	p) Dimensions	To be provided by vender	
	q) Classifications	VFI-SS-111 in accordance with IEC EN 62040-(Voltage Frequency Independent)	
	r) Static Switch /	Static bypass must be provided with	
	s)- Maintenance bypass / Service	Manual maintenance bypass or Service bypass must be inbuilt with each UPS, in	
7	UPS Monitoring		
		UPS should have following	
	a	1 Nos. RS232 Ports	
	b	SNMP (TCP/IP communication with	
	c	Potential free dry contacts for main events	
	d	ModBus RTU (RS485) for BMS connectivity	

<b>8</b>	<b>OTHER FEATURES</b>	(System should confirm to following features)	
<b>a</b>	<b>Paralleling</b>	should be suitable for parallel up to 6 Modules	
<b>b</b>	<b>UPS Design for Applications</b>	Suitable for Data centers, Blade servers and sensitive IT equipment	
<b>c</b>	<b>Isolation Transformer</b>	1:1 Delta -Star Isolation Transformer must be inbuilt or external at inverter output to make system more reliable, to provide galvanic isolation between source (UPS) & Loads, to provide protection against DC to connected loads and line noise.	
<b>d</b>	<b>Power Output Loads</b>	0.8 Inductive to 0.9 Capacitive without reducing the Active Power	
<b>e</b>	<b>Back feed</b>	must be Built-in as standard.	
<b>f</b>	<b>Phase Shift</b>	Phase shift angle 120degree+/-1degree for balanced load	
		and 100% unbalanced load	
<b>h</b>	<b>Parallel Cable</b>	100% Redundant parallel communication	

#### 3.4.10 Power supply to the racks

Power supply to the racks should be provided with a redundant busbar trunking system.

#### 3.4.11 Earthing

Provision for proper chemical earthing of all equipment related to the Data Centre should be provided as per IEEE guidelines.

- Resistance of combined earth pits should be less than 1  $\Omega$ .
- All earth pits should have minimum depth of 3 meter from the NGL.
- All earthing pits should have dual feed and shall have close loop mechanism.

#### 3.4.12 Electrostatic discharge (ESD) control

The Data Centre should be provided with equipment and methods for proper electrostatic discharge control

#### 3.4.13 Power cables

All power cables should be according to prevailing standards. Detailed specifications should be provided in the bid.

#### 3.4.14 Site tests

Proper site tests as per standards should be conducted as a part of successful commissioning.

### 3.5 Cable trays

- Supply and installation of wire mesh SS Cable tray (if below the rack) and in other areas ladder/perforated electro galvanised type cable tray as per approved layout in DC area, AC power ladder type cable tray for power cables in power room will be in the scope.
- All the required site-based modification, structural changes and mechanical jobs will be in scope.
- All metal cut portion should be cold galvanised with 2mm non hurting.
- In server and communication room for each rack row two data cable tray (steel basket type) of size 450 mm (w) × 100 mm (h) should be provided.

### 3.6 Server racks

Racks for the Data Centre are to be provided as a part of this tender. All the racks should be floor standing 42U racks of dimension 800 mm × 1400 mm. Cooling equipment (RDHx) would be additional. Sufficient spacing must be ensured between the racks.

#### 3.6.1 iPDU

Each rack must have minimum 2 No of vertical iPDUs each feeding power from two different Sources.

Input

Voltage: 380/415VAC

Frequency: 50 Hz / 60Hz (As per supply input)

Power in Socket Type: 3 Φ, 32/64Amps, IEC 60309(3P+N+E), 380/415VAC

Cord Length: 3 meters

Input Current: 64Amps

Output

Voltage: 250 VAC per phase

Frequency: 50Hz / 60Hz (As per supply input)

Compute: Power out Socket Type: IEC-60320 C13 (3 Nos.), IEC-60320 C19 (10 Nos.) as per rack table above.

Networking and Storage: Power out Socket Type: IEC-60320 C13 (21 Nos.), IEC-60320 C19 (3 Nos.) as per rack table above.

Current Operating range: 63 Amps per phase minimum

Features

- Aggregate Current Monitoring: Monitors the aggregate / Total current flowing through the device.
- Monitors and Tracks Aggregate power consumption.

- Conforms to CLASS I measurement accuracy.
- Monitoring and Metering of electric parameters: Voltage (V), Current (I), Energy (kWH), Power (kVA, kVAR), Power factor (cos F)
- Current Threshold settings with warning LED on front panel and Buzzer alarm.
- LED Display of Aggregate current on front panel.
- Networking: 10/100 Base Ethernet Port.
- Provision to connect Temperature-Humidity Sensor.
- Hot Swappable Controller.
- Branch Circuit Protection: One (1) appropriate Hydraulic Magnetic Circuit Breaker per phase.

User Interface:

- Integrates with any DCIM System through SNMP.

Interface and Protocol Support

- HTTP
- SNMP
- MODBUS TCP/IP
- MODBUS RTU(RS-485)
- FTP
- DHCP
- IPV4 Support
- Telnet

Mechanical

- Display / control panel: Three-digit 7 segment Display or Better
- Color: RAL 9005

Environmental Requirements

- Operating temperature: 0 – 45°C
- Humidity: 0 – 95 % RH non-condensing

### 3.7 HVAC

#### **Technical Specification for Inverter Precision AC Units**

##### **DIRECT EXPANSION (INVERTER) PRECISION AIR CONDITIONERS**

###### Scope

The scope of work comprises of supply, installation, testing and commissioning of self-contained BLDC Inverter Scroll/ Digital Scroll Precision air conditioning units suitable for operation on DX Mode. The unit should have an advanced microprocessor to the below specifications and in accordance with the Schedule of Quantities. The OEM Company should have ISO 9001: 2015 certified manufacturing unit.

## General

Modular construction Precision air conditioning unit suitable for operation in DX mode with R410A refrigerant with Top/ bottom discharge arrangement (as per BoQ) consisting of inlet filter, Draw through direct-drive Electronically commutated Motors and Backward curved Plug fans, fan motor assembly to deliver desired air quantity, **BLDC Inverter Scroll Compressor(s)**, Direct Expansion Cooling Coil, **Electronic Expansion Valve**, Heater banks to maintain humidity inside the space, condensate drain pan of Stainless Steel construction, Microprocessor panel, programmable control complete with display for control and monitoring of the Unit functions. The unit should be suitable for operation on 415 V, 50 Hz, AC supply.

## Unit Base & Casing

Base panel shall be constructed out of sandwich panels of galvanized steel and painted with epoxy powder. All four side panels (including front door) shall be double-skinned sandwiched panels. The panels shall be insulated on the inside with minimum of 30 Kg/ cum glass wool, for fire insulation class A1. Unit shall be complete with space for refrigeration equipment, fans, cooling coils, liquid receiver, and multistage strip heaters, and modulating Humidifiers. Unit shall be provided with welded tubular steel floor stand with adjustable legs and requisite vibration isolation pads.

## Fan

The units should be equipped with direct driven backward curved EC radial fans with electronically commutated brushless motors; the technology employed by these motors allows straightforward control of fan speed by means of the electronic controller in order to obtain step less adjustment of air flow rate and static pressure to ensure correct distribution of the treated air. The motor's high efficiency should make for less energy absorption, especially at partial loads and during starting (lowering of peak current), which means a reduction in power consumption of approximately 30% compared to AC motor. The motor shall have minimum IP54 Protection.

## Filters

The filter chamber shall be an integral part of the system and withdraw able from the front of the unit. Filtration shall be provided by deep V form class ISO Coarse 75% (ISO 16890-3; G4 - EN779). The filtering material (synthetic fibre) is optimised to guarantee the required filtration class and, at the same time, to minimize the head losses on the air side.

## Evaporator Coil

Precision packaged unit shall comprise of cooling coil of copper tubes expanded into aluminium fins with corrugated profile and **hydrophilic** treatment. Face and surface areas shall be such as to assure rated capacity and the air velocity across the coil and Filter shall not exceed 2.78 m/s. The cooling coil shall be a minimum of 3 rows deep and the fin spacing shall not exceed 1.8 mm. Coil selection to be suitable for sensible heat factor (SHF) $\geq$ 0.95 and provided with **hydrophilic coating** to minimize/eliminate water carry over into the airflow stream. **Drain pan shall be made of stainless steel.**

## Compressor

The compressor shall be of the high efficiency scroll design operating with R410A refrigerant and 400V/3~/50 Hz supply.

There shall be double independent Refrigerant Circuits in the unit. Minimum one compressor should be scroll with **inverter controlled brushless DC motor**, operating with R410A and power supply of 400-460V/3ph/50-60Hz. The compressor should have integrated thermal overload protection and acoustic hood. The compressor motor control driver is provided with integral electronic protection against over-temperature, over current, over or under-voltage with absence of one or more phases. The electronic control of the inverter is provided with automatic soft-start system and continuous control of the compressor curve to prevent and correct its use beyond the maximum allowed limits.

**Crankcase Heater** on Compressor should be integral part of the unit.

Compressors, the humidifier shall be isolated from the air flow in the version with downward flow, and in the air flow in versions with upward output. The compressor shall be charged with synthetic oil and designed for operation on environment friendly refrigerant R410A.

## Refrigeration Circuit

The refrigeration system shall be of the single direct expansion type and incorporate hermetic scroll compressors, complete with crankcase heaters.

The refrigerant circuit comprises:

- Liquid receiver
- Delivery oil separator
- Electronic expansion valve
- Solenoid valve for shutting off the refrigerant liquid
- Refrigerant liquid flow indicator
- Solid cartridge freon filter
- Safety valve
- High pressure safety pressure switch with manual reset
- Low pressure switch with automatic reset
- Shut-off valves for external connections (versions with remote condenser)
- Copper refrigerant pipes with anti-condensation insulation on the suction line
- Pipe taps on suction and delivery side and charging valve on liquid side.
- Each Compressor to have its own independent Evaporator and Condenser.

Expansion device: Electronic Expansion Valve (EEV)

- The unit should have Electronic Expansion Valve, which offers the following advantages:
- Fast, high precision adjustment of refrigerant flow;
- Fast arrival of the unit at steady state conditions;
- Superheating value remains constant in variable thermal load conditions;
- Efficient operating conditions of the compressor, especially in the presence of low room temperatures;
- Wide working range with consequent extension of the unit's operating limits. These properties result in enhanced performance of the unit and make it possible to obtain very significant energy savings
- The Pressure transducers attached to the EEV shall be able to display real time pressure (Suction & Discharge) and Superheat on the Microprocessor panel.

**The Temperature Sensor attached to the EEV shall be able to display real time parameters of Refrigerant such as Suction & Discharge Temperature**

#### Air Cooled Condenser

Condenser shall be air-cooled type, suitable for outdoor installation and shall be suitable for operating at high ambient of 50 °C DBT and at low ambient of up to 0 °C DBT temperatures. Condenser shall be in copper tube & aluminium fins construction and shall be factor coated with anti-corrosive coating against corrosive environment. Condenser coil shall be of maximum 4 rows deep and the fin spacing shall not exceed 2mm or as per OEM Standards

The condenser fan/s shall be of propeller type with max (1500)

RPM variable voltage electric motor complete with IP-54 protection. Motor shall be speed controlled to ensure a stable operation for varying ambient; by a factory fitted direct/indirect acting head pressure activated step-less Fan Speed Controller or using Electronically Commutated Fan. The condenser shall be complete with provisions for refrigerant piping connections, shut off valves and any other standard accessories necessary with the equipment supplied. Each Circuit to have its independent set of condenser coil and Fans is separate casing.

#### Electric Strip heaters

Each packaged unit shall be provided with multistage electric heaters (minimum 3 Stage) with heating elements constructed from a non- oxidable material. Electric strip heaters shall be of the low temperature totally enclosed strip type fitted with radiation fins and suitable for operating at black heat. If overheating occurs, a safety thermostat should cut off the voltage supply to the heaters and triggers an alarm.

#### Humidifier

Boiling water in a polypropylene steam generator shall provide humidification. The humidifier shall be capable of providing continuous auto modulation in steam generation from 30-100% as per the steam requirement per hour. The humidifier shall be fully serviceable with replaceable electrodes. Wastewater shall be flushed from the humidifier by initiation of water supply valve via U-trap. The microprocessor should be able to display the current drawn and actual steam output in the microprocessor.

#### De-Humidification

De-humidification cycle shall operate by reducing the speed of EC fan to reduce ADP of coil. Hence, by reduction of fan speed there shall be additional power saving.



#### Water Sensor:

The system shall be provided with relevant water detection kit which shall have sensors. Each of the sensor must be capable to detect individually any water below the false floor near the unit, the sensor must be connected to the unit microprocessor thus enabling the controller to give an alarm in case of wet floor.

#### Air Flow Sensor

The unit should have inbuilt Air Flow Rate Feedback Sensor to display the real time Airflow rate and also to have fan modulation function based on Pressure differential or Airflow rate.

#### Supply Air Sensor

The unit should have inbuilt Supply Air Flow Temperature sensor to show real time Supply Air Temperature on the display of the unit.

#### Microprocessor Control System

#### Logic Circuitry:

A microprocessor shall continuously monitor operation of each Server room air-conditioning unit continuously digitally display room temperature and room relative humidity, alarm on system malfunction and simultaneously display problem. It should also display the Suction, Discharge Temperature and Pressure of the refrigerant along with the superheat. All the required transducers should be part of the Refrigerant circuit accessories. When more than one malfunction occurs, flash fault in sequence with room temperature, remember alarm even when malfunction cleared, and continue to flash fault until reset.

Microprocessor to control the following functions:

- Return Air temperature/Delivery Temperature
- Relative Humidity (HH versions)
- Speed of the delivery fans
- Speed of the condensation fans
- Timing of compressors with automatic rotation
- auto restart after a voltage failure
- integrated control of brushless DC compressor, with constant optimisation of operation;
- Alarm signal on two levels
- Controlled automatic reset of high- and low-pressure alarms

Display of:

- Environment temperature;
- Humidity (HH versions);
- Description of the alarms;
- Functioning timer;
- State of controlled devices

Malfunctions:

Power Loss, Loss of Airflow, High Room Temperature, Low Room Temperature, High Humidity, Low Humidity, Supply Fan Overload, and Water under Floor.

The standby unit should immediately come in action in the event of any alarm/failure of the working unit without waiting for the temperature to increase to the high temperature limit thereby controlling the temperature of the Data Centre.

The unit should also be capable of starting the standby unit in case the temperature is not able to achieve with the working units.

Automatic lead unit sequencing to extend equipment life and automatic rotation of standby unit should be part of the microprocessor itself. Microprocessor must be suitable to control multiple units if required with hard wiring which can be done at a later date.

In case of power failure, the precision packaged unit shall start automatically without any body's intervention. Controllers shall be Microprocessor based with capability to generate alarm and networking of all units to rotate (working + standby) units, equalized run time capability (for 2 or 3 packaged units), programmable timer, with display of all parameters.

The unit's microprocessor controller should have feature to enable all installed units to together to work in TEAM MODE to extract maximum Cooling Efficiency by operating individual units on Part Load by virtue of Modulating Compressor & Modulating Indoor Fan

## ANNEXURE-I

## Technical Compliance checklist

S.no	Technical Specifications	Compliance Yes/No
1	Precision air conditioning unit suitable for operation in DX mode with R410A refrigerant with Top/ bottom discharge arrangement (as per BoQ) consisting of inlet filter, Draw through direct-drive Electronically commutated Motors and Backward curved Plug fans, fan motor assembly to deliver desired air quantity, BLDC Inverter Scroll Compressor(s), Direct Expansion Cooling Coil, Electronic Expansion Valve, Heater banks to maintain humidity inside the space, condensate drain pan of Stainless Steel construction, Microprocessor panel, programmable control complete with display for control and monitoring of the Unit functions. The unit should be suitable for operation on 415 V, 50 Hz, AC supply.	
2	The Unit shall be designed to deliver Actual capacity at return air temperature 24 deg C/ 50% RH and ambient temperature of 45 deg C	
3	All four side panels (including front door) shall be double-skinned sandwiched panels. The panels shall be insulated on the inside with minimum of 30 Kg/ cum glass wool, for fire insulation class A1. Unit shall be complete with space for refrigeration equipment, fans, cooling coils, liquid receiver, and multistage strip heaters, and modulating Humidifiers. Unit shall be provided with welded tubular steel floor stand with adjustable legs and requisite vibration isolation pads	
4	The units should be equipped with direct driven backward curved EC radial fans with electronically commutated brushless motors; the technology employed by these motors allows straightforward control of fan speed by means of the electronic controller in order to obtain step-less adjustment of airflow rate and static pressure to ensure correct distribution of the treated air. The motor shall have minimum IP54 Protection	
5	The filter chamber shall be an integral part of the system and withdraw able from the front of the unit. Filtration shall be provided by deep V form class ISO Coarse 75% (ISO 16890-3; G4 - EN779). The filtering material (synthetic fibre) is optimised to guarantee the required filtration class and, at the same time, to minimize the head losses on the air side.	
6	Unit shall comprise of cooling coil of copper tubes expanded into aluminium fins with corrugated profile and hydrophilic treatment. Face and surface areas shall be such as to assure rated capacity and the air velocity across the coil and Filter shall not exceed 2.78 m/s. The cooling coil shall be a minimum of 3 rows deep and the fin spacing shall not exceed 1.8 mm. Coil selection to be suitable for SHF≥0.95 and provided	

	with hydrophilic coating to minimize/eliminate water carry over into the airflow stream. Drain pan shall be made of stainless steel	
7	There shall be double independent Refrigerant Circuits in the unit. Minimum one compressor should be scroll with inverter controlled brushless DC motor, operating with R410A and power supply of 400-460V/3ph/50-60Hz. The compressor should have integrated thermal overload protection and acoustic hood. The compressor motor control driver is provided with integral electronic protection against over-temperature, over current, over or under-voltage with absence of one or more phases. The electronic control of the inverter is provided with automatic soft-start system and continuous control of the compressor curve to prevent and correct its use beyond the maximum allowed limits.	
8	Crankcase Heater on Compressor should be integral part of the unit. Compressors, the humidifier shall be isolated from the air flow in the version with downward flow, and in the air flow in versions with upward output. The compressor shall be charged with synthetic oil and designed for operation on environment friendly refrigerant R410A.	
9	The refrigeration system shall comprise of Liquid receiver, delivery oil separator, Electronic expansion valve, Solenoid valve for shutting off the refrigerant liquid, Refrigerant liquid flow indicator, Solid cartridge freon filter, Safety valve, High pressure safety pressure switch with manual reset, Low pressure switch with automatic reset, Shut-off valves for external connections (versions with remote condenser), Copper refrigerant pipes with anti-condensation insulation on the suction line, Pipe taps on suction and delivery side and charging valve on liquid side, Each Compressor to have its own independent Evaporator and Condenser	
10	The unit shall have Electronic expansion valve with pressure transducers attached to the EEV shall be able to display real time pressure (Suction & Discharge) and Superheat on the Microprocessor panel. The Temperature Sensor attached to the EEV shall be able to display real time parameters of Refrigerant such as Suction & Discharge Temperature	

11	<p>Condenser shall be in copper tube &amp; aluminium fins construction and shall be factor coated with anti-corrosive coating against corrosive environment. Condenser coil shall be of maximum 4 rows deep and the fin spacing shall not exceed 2mm. The condenser fan/s shall be of propeller type with max 1310 RPM variable voltage electric motor complete with IP-54 protection. Motor shall be speed controlled to ensure a stable operation for varying ambient; by a factory fitted direct/indirect acting head pressure activated step-less Fan Speed Controller or using Electronically Commutated Fan. The condenser shall be complete with provisions for refrigerant piping connections, shut off valves and any other standard accessories necessary with the equipment supplied. Each Circuit to have its independent set of condenser coil and Fans is separate casing.</p>	
12	<p>Unit shall be provided with multistage electric heaters (minimum 3 Stage) with heating elements constructed from a non- oxidable material. Electric strip heaters shall be of the low temperature totally enclosed strip type fitted with radiation fins and suitable for operating at black heat. If overheating occurs, a safety thermostat should cut off the voltage supply to the heaters and triggers an alarm.</p>	
13	<p>The humidifier shall be capable of providing continuous auto modulation in steam generation from 30-100% as per the steam requirement per hour. The humidifier shall be fully serviceable with replaceable electrodes. Wastewater shall be flushed from the humidifier by initiation of water supply valve via U-trap. The microprocessor should be able to display the current drawn and actual steam output in the microprocessor.</p>	
14	<p>De-humidification cycle shall operate by reducing the speed of EC fan to reduce ADP of coil. Hence, by reduction of fan speed there shall be additional power saving.</p>	
15	<p>The system shall be provided with relevant water detection kit which shall have sensors. Each of the sensor must be capable to detect individually any water below the false floor near the unit, the sensor must be connected to the unit microprocessor thus enabling the controller to give an alarm in case of wet floor</p>	
16	<p>The unit should have inbuilt Air Flow Rate Feedback Sensor to display the real time Airflow rate and also to have fan modulation function based on Pressure differential or Airflow rate and should have inbuilt Supply Air Flow Temperature sensor to show real time Supply Air Temperature on the display of the unit.</p>	
17	<p>Microprocessor to control the Return Air temperature/Delivery Temperature, Relative Humidity (HH versions), Speed of the delivery fans, Speed of the condensation fans, Timing of compressors with automatic rotation, auto restart after a voltage failure, integrated control of brushless DC compressor, with constant optimization of operation; Alarm signal on two levels, Controlled automatic reset of high and low pressure alarms</p>	

18	Microprocessor to display of: Environment temperature; Humidity (HH versions); Description of the alarms; Functioning timer; State of controlled devices	
19	The unit should also be capable of starting the standby unit in case the temperature is not able to achieve with the working units. Automatic lead unit sequencing to extend equipment life and automatic rotation of standby unit should be part of the microprocessor itself. Microprocessor must be suitable to control multiple units if required with hard wiring which can be done at a later date	
20	The unit's microprocessor controller should have feature to enable all installed units to together to work in TEAM MODE to extract maximum Cooling Efficiency by operating individual units on Part Load by virtue of Modulating Compressor & Modulating Indoor Fan	

### 3.8 RDHx

#### **TECHINCAL SPECIFICATIONS**

##### **PRODUCT: RDHx**

###### General:

The cooling solution should ensure optimum thermal and energy performance by removing the heat generated by the active IT/compute equipment directly at source, preventing hot exhaust air entering the data centre/server room. It should work independent of IT equipment fan speed to route the warm air flow to the cold water heat exchanger. The heat from the warm exhaust air flow from the IT components need to be dissipated by way of the water heat exchanger with active EC fans mounted on the cooling door. The solution should be self-sufficient with inbuilt controller and sensors to control the flow of water and fan speed depending on temperature data monitored through various sensors mounted in front and rear of the RDHx doors. The solution design should have redundancy planned in case one or more rack doors are opened/not working etc. The solution should have reference sites in India with similar or high load pattern and should be UL certified.

###### Cooling output:

- Cooling output must be designed as per individual rack IT load in terms of kW. See table under "Sizing and technology options" for Rack IT load.

###### Water supply temperature:

- It should have flexible in selecting water supply temperatures between 15°C and 22°C, which allows higher evaporating temperature and increase the availability of energy efficient 'free cooling'

###### Flexibility and scalability

- RDHx must work accordingly to the IT load variations in the rack to optimize energy consumption.
  - Each RDHx should be equipped with its own intelligent controller which manages the water flow and EC fan speed as per IT load and should be independent of the other coolers
  - There should not be any over cooling or undercooling irrespective of rack IT load. Controller should ensure adequate cooling to be delivered.
  - Intelligent RDHx must have in built controller inbuilt within the chassis of the RDHx and receive the feedback from minimum 6 no's temperature sensors installed at various points (front, rear, and exhaust) and based on the feedback, controller automatically adjust the fan speed, water flow rate. if integrated, the output water temperature from the cooling medium/chiller can be adjusted using the feedback from same controllers for consistent delivery of cooled air into the Data Centre, with no operator intervention
- Built in minimum 1 No's temperature probe to monitor the rack intake temperature installed in front of the rack.
  - Built in minimum 4 No's of temperature probes to monitor server exit temperature (from Top – Bottom of RDHx, covering maximum coil area)
  - Built in minimum 1 No's temperature probe to monitor cold air temperature output from RDHx

#### Fans

- Fans must be Backward curved centrifugal fans Incorporating EC technology, IP44 rated
- Minimum 5 no's Number of fans must be incorporated in each unit.
- Unit Noise should not cross more than 60 dBA @ 1 metre at full load condition
- Unit Noise should not cross more than 48 dBA @ 1 metre at normal load condition (30% fan speed)
- Each fan must deliver maximum airflow is 1075m<sup>3</sup>/hr

#### Standards and Compliances:

- It should comply with min IP21 rating.
- It should be designed in accordance with TUV and CSA. Also units conform to UL/CSA 61010-1.
- Compliance to CE, FCC and UL.
- Certificates to be provided for the claimed standards and compliances at the time of submission.

#### Safety & system resilience:

- The solution should have inbuilt functionality to prevent leakage by maintaining full circuit at negative pressure. This is addition to leakage detection.
- In the event of a breach to pipe work or even untightened fittings, water should stop escaping from the pipework allowing the cooling system to continue running unimpaired providing uptime, safety and system resilience.

#### Condensate free:

- System should ensure free from condensation which operates above dew point temperature of water

#### Supply & Return Hoses pipe:

- Hoses are made from a mix of galvanised wire, fabric and rubber silicone offering ultra-pliable hoses with a smaller bend radius than most other hoses available, which help prevent twisting while offering the benefit of additional flexibility
- Compression connector to copper coil – 28mm
- Female cone/BSP connector to HVAC pipe work – 25mm
- Tested with pressure of 12 bar & theoretical burst minimum at 30bar

#### Communication:



- Must have communications cards – TCP / IP or Modbus RS485 comms card, Bacnet for BMS integration.

Mounting feature:

- Should be fitted to the back of an enclosure, typically being IEC 297 3 and EIA STD 310 compliant.
- Should be compatible with all type of racks from 35U to 57U height.
- Should be easily available for the size of 600mm, 750mm & 800mm racks width

With its external frame construction, the heat exchanger should not occupy space in the rack – the full server rack is thus available for the IT equipment.

### 3.9 Chiller Plant

**TECHINCAL SPECIFICATIONS**  
**PRODUCT: AIR COOLED CHILLERS**

**Codes & Standards:**

The design, materials, manufacture, inspection, testing and performance of Air cooled chiller units shall comply with all currently applicable statutes, regulations, codes, and standards in the locality where the equipment is to be installed. Nothing in this specification shall be construed to relieve the tenderer of this responsibility.

All units shall be made according to the guidelines of latest editions of BEE, EUROVENT, ARI, ASHRAE, ISHRAE and other applicable standards.

**Scope of Work:**

The scope of this section comprises the supply, erection, testing and commissioning of Air-Cooled Chiller machine conforming to following specifications and in accordance with the requirement.

**General:**

The Chiller machine shall consist of Scroll compressors/Screw

Compressor, starter, Shell and Tube Evaporator and air-cooled condenser with Copper – Aluminium Condenser Coil with Axial Electronically commutated fans and with filled R410a/R134a Refrigerant Gas. Refrigerant piping, wiring and automatic controls all mounted on a common steel frame, factory charged refrigerant gas and oil, spring/rubber isolator and other accessories factory assembled and tested. Machine shall be designed for tropical climate & multiple start-ups.

**Capacity:**

The actual refrigeration capacity of Chiller machine shall be as per the design requirement mentioned in the RFQ **The minimum COP(including fan power ) of Chiller as per Eurovent/AHRI design condition should be min 3.1**

**Structure:**

Modular with load-bearing frame, made of galvanized sheet-iron coated with polyester powder at 180°C, which ensures very high resistance to weather conditions. The screws and bolts should be of stainless steel. All the joints are riveted / nut bolted with SS rivets/ nit bolts and no welding works should be carried out as welding portion of structure corrodes.

**Compressors:**

The compressors shall be hermetic orbiting spiral multiple scroll compressors connected in tandem or trio or semi-hermetic single/multiple screw compressor with VFD fitted with oil level sight glass, and electronic protection.

The compressor shall be of the high efficiency scroll/screw design operating with R410A/R134a Refrigerant respectively only. The compressor motor control driver is provided with integral electronic protection against over temperature, over current, over or under-voltage with absence of one or more phases.

All compressors should have internal thermal overload protection which automatically cuts out the power supply in the event of a thermal overload and internal bypass valve between high and low pressure

- pre-filled oil and heater for crankcase pre-heating
  - Valves should be situated on both discharge and suction sides

**Refrigerant:** The units should be equipped with direct expansion circuit should be suitable for R410A/R134a refrigerant only

**Heat Exchanger – User Side:** The exchanger shall be Shell and tube type evaporator, insulated with a shroud of closed-cell insulating material to reduce heat loss.

#### **Heat Exchanger – Source Side**

**Air Cooled Condenser:** Condenser shall be air-cooled type, suitable for outdoor installation and shall be suitable for operating at low ambient of up to -10 deg C db. temperatures and at high ambient of 50 deg C db.

Condenser coil shall be made with finned pack coils with copper tubes and aluminium fins having an anti-corrosive coating on condenser coils for the corrosive environment (NCR region). The V-shaped arrangement of the coils or as per OEM standard should enable them to be protected from hail and makes the unit compact. It should also guarantee an increase in the air intake surface, and leaves ample space for distribution of the components of the refrigerant circuit

#### **Condenser fans: EC Fan**

The fans should be EC axial fans, directly coupled to an electronically commutated brushless motor, with integrated thermal overload protection and IP 54 protection rating. These motors with permanent magnet rotors guarantee very high-efficiency levels for every operating condition and allow a 15% saving per fan to be obtained. The fan includes the shroud, designed to optimize its efficiency, and reduce noise emission to a minimum, and the safety guard. The fan houses shaped nozzles and included a safety guard in conformity with standard UNI EN 294. All the fans should have a safety guard. When the compressor stops condenser fan should also stop. Motor shall be speed controlled to ensure a stable operation for varying ambient.

The fan motor should have fan speed control for condensation control to enable trouble free operation during varying ambient condition.

Also, through a 0-10V analogue signal sent to each fan, the microprocessor allows condensation control by continuous control of air flow as the external air temperature changes and a consequent reduction in noise emission.

#### **Refrigeration Circuit:**

The refrigeration system shall be direct expansion type and incorporate hermetic scroll compressors or semi hermetic single/multiple screw compressor with VFD complete with crankcase heaters.

The pipes of the circuit and the exchanger must be insulated with extruded closed cell expanded elastomer that is resistant to UV rays.

#### **Refrigerant circuit: The circuit includes:**

- Charging valve
- Liquid sight glass
- Replaceable solid cartridge dehydrator filter
- Electronic expansion valve
- Pressure transducer for compressors.
- High- and low-pressure switches
- Shut-off valve in the liquid line
- Suction and discharge valve

**Electronic thermostatic valve:**

The use of this Electronic Expansion Valve is particularly advisable on units operating in very variable heat load or operating mode conditions, as in the case of joint management of air conditioning and high temperature water production.

The solenoid valve function on the liquid line is performed by the electronic expansion valve, which shuts off the liquid by closing when the circuit stops.

**Advantages:**

- Maximize heat exchange at the evaporator.
- Minimize response times to changes in load and operating conditions.
- Optimize control of overheating.
- Ensure maximum energy efficiency ensure maximum energy efficiency
- Fast, high precision adjustment of refrigerant flow.
- Fast arrival of the unit at steady state conditions.
- Superheating value remains constant in variable thermal load conditions.
- Efficient operating conditions of the compressor.
- Wide working range with consequent extension of the unit's operating limits. These properties result in enhanced performance of the unit and make it possible to obtain very significant energy savings.

**Electrical Control Panel:**

The electrical control panel should be made in a powder coated galvanized sheet-iron box with forced ventilation and IP54 protection rating. The electrical control panel should be provided with an incoming Isolator switch and a step down transformer for supplying power 24 v to the electronic controller, based on a microprocessor board and a display. All the electrical cables inside the panel should be numbered and the terminal board dedicated to the customer's connections is coloured orange so that it can be quickly identified in the panel.

The cables should be Cross linked polyethylene insulated, armoured Copper cabling, with a low smoke and flame sheath (XLPE/SWA/LSF). All cables should have lugs and ferules in place. Labelling to be provided on all components/breakers/contactors. Wiring diagram to be supplied inside the unit. Suitable arrangement to be provided for the entry of power cables.

**Electrical control panel: The circuit includes:**

- Main power disconnect switch on front door panel of unit. This switch handle is used when panel is closed and can prevent access until switched to off position.
- Microprocessor controller with display accessible from the outside

- Automatic circuit breakers for compressors with fixed calibration
- Fuses to protect the fans and auxiliary circuits
- Fan contactors
- Phase monitor
- Thermal magnetic circuit breakers for pumps (if present)
- Potential-free general alarm contacts
- Single clean operating contacts for compressors, fans, pumps (if present)
- Serial port RS485 with Mod Bus protocol
- External air temperature probe

**Control & Safety devices:**

The units must be fitted with the following control and safety components:

- High pressure switch with manual reset
- High pressure switch with automatic reset and limited interventions managed by the controller.
- Low pressure switch with automatic reset and limited interventions managed by the controller.
- High pressure safety valve.
- Protection against over temperature for compressors.
- Protection against over temperature for fans.
- User-side pressure differential flow switch
- Temperature probe for freeze protection

**Integration:**

The unit should include INTEGRATOR for giving industry standard (Modbus / Lon Works / BACnet) output to BMS system. Mapping shall be required for all points displayed on precision unit microprocessor panel.

**Microprocessor based Control System:**

The Unit should have a programmable controller with LCD display, hardware and inbuilt software performing the various functions, alarms and controls required to run and manage the unit.

**Service Area:** The unit shall be serviceable from all 4 sides.

**Noise Level:**

The unit should be designed for Low noise Operation. The noise level of the unit should not be more than 70 dBA (sound pressure values measured at 10 meters distance from the unit in free field and at nominal working conditions, in compliance with ISO 3744)

**Power supply** [V/ph./Hz]: 400/3~/50 ±5% +N

**Quality Assurance:**

The system shall be designed and manufactured according to world-class quality standards. The manufacturer shall be ISO 9001 certified. The Unit shall be tested in factory before shipment.

**Testing:**

The entire unit shall be a fully factory assembled and tested prior to dispatch and test certificates shall be submitted. All the units must be factory tested and supplied complete with oil and refrigerant charge

**Certification:** The unit should be Eurovent / AHRI certified. The computerised selection at the design condition and Eurovent/AHRI certification of the proposed chiller have to be submitted

**ANNEXURE-I**

**Technical Compliance checklist**

S.no	Technical Specifications	Compliance Yes/No
1	The unit should be Eurovent / AHRI certified.	
2	The Chiller machine shall consist of multiple Scroll compressors or single/multiple screw compressor with VFD, starter, Shell and Tube Evaporator and air-cooled condenser with Copper – Aluminium Condenser Coil with Axial EC fans and with filled R410a/R134a Refrigerant Gas	
3	<b>The minimum COP ( including fan power ) of Chiller as per Eurovent/AHRI design condition should be min 3.0</b>	
4	The chiller proposed should be designed at 45 deg C ambient temperature as per cooling requirement for the actual IT Load.	
	Environment friendly refrigerant R410A / R134a and shall come factory charged with refrigerant	
5	Compressors should have internal thermal overload protection which automatically cuts out the power supply in the event of a thermal overload and an internal bypass valve between high and low pressure, pre-filled oil and heater for crankcase pre-heating, and internal mechanical non-return valve on gas delivery line	
6	The exchanger shall be Shell and tube type evaporator, insulated with a shroud of closed cell insulating material to reduce heat loss.	
7	The unit shall have a V-shaped arrangement condenser coil with finned pack coils with copper tubes and aluminium fins having an anti-corrosive coating on condenser coils for the corrosive environment	
8	The condenser fans should be EC axial fans, directly coupled to an electronically commutated brushless motor, with integrated thermal overload protection and IP 54 protection rating	
9	The refrigeration system shall be direct expansion type and incorporate multiple hermetic scroll compressors or single/multiple screw compressor with VFD complete with crankcase heaters.	

	The pipes of the circuit and the exchanger must be insulated with extruded closed cell expanded elastomer that is resistant to UV rays.	
10	The Refrigerant shall have charging valve, Liquid sight glass, Replaceable solid cartridge, dehydrator filter, Electronic expansion valve, Pressure transducer for compressors, High- and low-pressure switches, safety valves, shut-off valve in the liquid line	
11	The Unit shall have an electronic expansion valve to maximize heat exchange at the evaporator, minimize response time, optimize control of overheating, Ensure maximum energy efficiency ensure maximum energy efficiency and fast, high precision adjustment of refrigerant flow	
12	The electrical control panel should be made in a powder coated galvanized sheet-iron box with forced ventilation and IP54 protection rating. The electrical control panel should be provided with an incoming Isolator switch and a step down transformer for supplying power 24 v to the electronic controller, based on a microprocessor board and a display	
13	The unit should include INTEGRATOR for giving industry standard (Modbus / Lon Works / BACnet) output to BMS system. Mapping shall be required for all points displayed on precision unit microprocessor panel	

The overall cooling solution should follow ASHRAE 2019 thermal guidelines.

**3.8 PUE**

- To assess the efficiency of the Data Centre the power usage effectiveness (PUE) would be computed as (advanced level 3 definition as per green grid)

$$PUE = \frac{\text{Data Centre facility power at the main LT panel input}}{\text{Total IT power measured at server}}$$

- The PUE should be estimated as the annualised average of hourly PUE calculations (8760 hours). A bin analysis will not be acceptable.
- The PUE should be estimated at various load factors ranging from 40% to 100%.
- The environmental conditions for estimating the annualised average PUE should be taken for Delhi from any standard source like ASHRAE, ISHRAE, IMD, NREL, energy simulation codes or standard software of reputed HVAC companies.
- Free cooling/water side economisers should be included in the scope of the overall design to achieve a low PUE value.
- The PUE calculations should be carried out as a part of the design of the Data Centre.

**3.9 Data Centre management and real-time measurements**

- The Data Centre should be equipped with state-of-the-art Data Centre infrastructure management (DCIM) system and building management system (BMS) to remotely monitor and manage all aspects of the Data Centre on a 24 × 365 basis.
- The DCIM and BMS systems should use standard IP based protocols.
- There should be real-time reporting of
  1. Power consumption, both aggregate and component wise.
  2. Temperature and relative humidity at various locations in the Data Centre.
  3. Temperature and pressure sensors for cooling and chilled water, energy, flow, BTU meters etc.
  4. Instantaneous PUE, hourly PUE, daily PUE, monthly PUE and annual PUE.
  5. Alarm indicators for component failures.
- There should be real-time monitoring and logging of all parameters of the Data Centre as per *ASHRAE/TGG 2009 Real time energy consumption measurements in Data Centre* guidelines (best practices).
- There should be facilities for periodic reports (including uptime reports) of all aspects of the Data Centre.

**ANNEXURE-I**

**3.10 BMS and DCIM**

S. No.	Specifications	Compliance (Yes/No)
1	The solution shall fully support a multi-vendor environment and be able to integrate third party systems via existing vendor protocols including, as a minimum, SNMP (TCP/UDP based), LonTalk, BACnet, KNX and MODBUS.	
2	The solution must assist in real time monitoring of building operation and performance	
3	The solution must assist in trending and logging of building operation and performance.	
4	The solution shall provide secure Web access using any of the current versions of Microsoft Internet Explorer, Mozilla Firefox, or Google Chrome browsers from any computer on the LAN	
5	The solution must be capable of integrating with the HVAC, PAC, Fire Alarms, Access Control, DG, UPS, Transformers, Temp sensors, iPDUs, etc	
6	All the control systems to be furnished with the solution shall be programmable directly from the GUI frontend / embedded toolset during the project duration. The use of configurable or programmable controllers that require additional software tools for post-installation maintenance shall not be acceptable.	
7	The designated BMS server shall host all graphic files for the control system.	



8	The solution must be capable of integrating with multiple Field Devices relevant to Data Center environments	
9	The solution shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. Physical connection of any control equipment, such as ODU, etc. shall be via Ethernet or IP.	
10	All components and controllers supplied under this solution shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data shall not be acceptable	
11	The solution shall incorporate the ability to access all data using HTML enabled browsers without requiring proprietary operator interface and configuration programs or browser plug-ins. An Open Database Connectivity (ODBC). Solution requiring proprietary database and user interface programs shall not be acceptable.	
12	A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture shall not be acceptable.	
13	The solution shall be capable of providing the following functionalities wherever relevant 1. Calendar functions. 2. Scheduling. 3. Trending. 4. Alarm monitoring and routing. 5. Time synchronization. 6. Integration of LonWorks, BACnet, and MODBUS controller data. 7. Network management functions for all SNC, PICU, PPCU, UICU, AUC and BCT based devices.	
14	The controllers to be provided with the solution shall be fully programmable to meet the unique requirements of the facility it shall control. The controller platform shall provide options and advanced system functions, programmable and configurable, that allow standard and customizable control solutions required in executing the "Sequence of Operation".	
15	The controllers / aggregators in the solution shall have expansion ability to support additional I/O requirements through the use of remote input/output modules and a local communication bus	
16	Each Alarm shall display an Alarms Category (using a different icon for each alarm category), date/time of occurrence, current status, alarm report and a bold link to the associated graphic for the selected system, area or equipment. The link shall indicate the system location, address and other pertinent information. An operator shall easily be able to sort events, edit event templates and categories, acknowledge or force a return to normal in the Events View as specified in this section.	
17	The solution must be capable of compliance reporting in accordance with the environmental and security regulations	

18	The solution must factor the requisite modules, terminal bases, I/O modules, connectors, aggregators, servers, etc. for complete end to end solution deployment	
19	The solution must support Control Loop Tuning & Optimisation for relevant devices (e.g. DG, PAC )	
20	The solution must enable to engineers for proactive adjustment not retrospective catch up.	

## ANNEXURE-I

### 3.11 Fire Detection Systems

Sl.No.	Description	Yes / No
1.1.0	Furnish a complete analogue addressable, electrically supervised, zone annunciation, fire detection and alarm system as specified herein and in accordance with the supplied drawings.	
1.1.1	The system shall include but limited to, one or more screen control panels, repeater panels, and sensors, call points, audible and visual alarm indicating devices and other accessories required to provide a complete fire detection and alarm system.	
1.1.2	The fire alarm system shall be wired as 2 core signal loops. 24V DC power wiring shall be installed to alarm sounders via addressable sounder modules or via conventional monitored sounder outputs within the control panel.	
2.1.1	The fire detection system shall be designed, installed and commissioned in accordance with : BS5839-1:2013 - Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises , IS-2189 (Indian Standard) for designed, installation.	
2.1.2	The alarm control panel will be independently certified to the following: EN54-2:1997+A1:2006 – Control and Indicating Equipment. EN54-4:1998 – Power Supplies.	
2.1.3	Declaration of Performance (DoP) certificates will also be available from the product manufacturer.	
2.1.4	The products will meet the requirements of the Construction Products Regulation (CPR) and Certificates of Constancy of Performance prepared by the approval body, will be available from the manufacturer.	
3.1.1	Manufacturers of the fire alarm system product supplied will have been in the business of manufacturing Fire Alarm products for at least 10 years.	
3.1.2	The equipment manufacturer shall operate a Quality Management system in accordance with ISO 9001:2000.	
3.1.3	The equipment shall be manufactured and regularly audited under a recognised factory control procedure (FCP), such as the BSI Kitemark scheme.	

4.1.3	<b>Loop Capacity</b> : Up to 252 individually addressed standard devices shall be configured on each addressable loop and up to 16 detection loops will be supported on a single panel.	
4.1.4	<b>Event Log</b> : A capacity of 9999 events stored in non-volatile memory, with a time stamp of 1 second resolution.	
4.1.5	The FACP shall incorporate a real-time clock to enable events to be referenced against time and date. In networked systems, a master clock panel will synchronise all panel clocks every 24 hours.	
4.1.5	FACP with a network board to allow up to 32 control panels and repeater panels to communicate with each other as "peer-to-peer" system on RS-485. The network shall be fully fault tolerant and shall continue to function normally under any single fault condition.	
4.1.6	This communication board will enable connectivity to the fire alarm PC based graphics system.	
4.1.7	FACP have capability of set up to 2000 cause and effect entries cause and effect tables for any combination of devices or zones of devices to operate devices, zones of devices or functions on any panel or panels connected to the network.	
4.1.8	System can allocate an 80 character location text message of Sensors, Manual Call points, Modules, Zones moitors and Sounders.	
4.1.9	<b>Panel Construction</b> : The housing shall afford a minimum ingress protection to IP30 and it shall not be possible to open the FACP without the use of a special tool or key.	
4.1.10	<b>Panel Indications</b> :FIRE GENERAL FAULT SYSTEM FAULT GENERAL DISABLEMENT FIRE PROTECTION ACTIVATED FIRE PROTECTION FAULT FIRE ROUTING ON FIRE ROUTING FAULT/DISABLED TEST MODE ON DELAYS ACTIVE SOUNDER FAULT/DISABLED POWER ON	
4.1.11	<b>Panel Controls</b> : BUZZER SILENCE SILENCE ALARMS / RE-SOUND ALARMS RESET SYSTEM ACTIVATE CONTROLS / LOGOUT DELAYS CONTROL	
4.1.12	<b>Fault Reporting</b> : The FACP shall monitor all critical system components and interconnections, internal and external, such that a failure, which would prevent the correct operation of the alarm functions, causes the GENERAL FAULT indicator to light and a message to be given on the full colour touchscreen display within 100 seconds of occurrence.	
5.1.2	The status of any Fire/Fault of Integrated Fire Alarm Panels, Panel should compliant with EN54-2, EN54-4 and Approved by LPCB.	

6.1.1	The multi-sensor should be capable of monitoring two different sensing elements: Photoelectric Thermal	
6.1.2	Temperature range from -20 °C to + 60 °C.	
6.1.3	Operating voltage from 17 – 41 V dc.	
6.1.4	The multi-sensor shall incorporate two LEDs, clearly visible from the outside, to provide indication of alarm actuation. The LEDs should be controlled from the FACP if the LEDs flash during the normal polling sequence. Having User selectable sensitivity modes 1% to 4.5% obs/m.	
6.1.5	Electronically addressed, approved by LPCB & Vds.	
6.1.6	In locations where the detector is not readily visible, remote indicator units shall be provided.	
7.1.1	The multi-sensor should be capable of monitoring three different sensing elements: Photoelectric Thermal CO	
7.1.2	An addressable loop-powered multi-sensor, with smoke, heat and CO & COHb (carboxy haemoglobin) sensing elements. RI & LED can be controllable separately if required,	
7.1.3	The unit offers different modes of operation and seamlessly matches the other sensors Range.Approved by LPCB.	
8.1.1	The heat detectors shall be capable of detecting rapid rise in temperature and/or fixed absolute temperatures. Approved by LPCB & Vds.	
8.1.2	The detector shall have Operating temperature range from -20 °C to + 60 °C.	
8.1.3	The Detector shall have provision to select fix temperature range from 0°C to 88°C .	
8.1.4	The heat detectors shall incorporate two LEDs, clearly visible from the outside, to provide an indication of alarm actuation.	
9.1.1	Fixed Temperature heat element and a Rate of Rise heat element, both of which are controlled from the Control Panel, allowing either thermal element or both elements simultaneously to be active in making the fire decision.	
9.1.3	Heat sensor has Rated to IP67.Approved by LPCB & Vds.	
9.1.4	The Detector shall have provision to select fix temperature range from 0°C to 88°C .	
9.1.5	The detector shall have Operating temperature range from -20 °C to + 60 °C.	
10.1.2	laser based forward light scatter for reliable early warning, Laser dust discrimination detection principle.	
11.1.1	The addressable call points shall be provided with an integral red LED to indicate activation.	

11.1.2	The addressable call points shall incorporate a mechanism to interrupt the normal addressable loop scan to provide an alarm response within 3 seconds and shall be field programmable to trigger either an alert or an evacuate response from the FACP.	
11.1.3	The unit should also be available as an integral SCI (short-circuit isolator) variant, both for internal and external use. Approved by LPCB & VdS.	
12.1.1	The addressable relay interface module shall be capable of switching two independent relays; either normally open or normally closed, each rated at 30 V, 1 Amp.	
12.1.2	The addressable relay interface module shall use a single loop address. A single input shall provide open and short circuit monitoring facilities, set locally at the unit.	
12.1.3	The unit shall be powered directly from the addressable loop.	
13.1.1	The addressable mains relay controller module shall be capable of switching one relay; either normally open or normally closed, rated at 250V, 5 Amps.	
13.1.2	A single input shall provide open and short circuit monitoring facilities, set locally at the unit.	
14.1.1	capable of monitoring one or two independent voltage free contacts, each normally open or normally closed, using a single loop address. The unit shall be powered directly from the addressable loop.	
15.1.1	The short circuit isolator base shall derive its power directly from the addressable loop.	
16.1.1	The Loop Powered Wall Sounder shall be connected directly to the loops .	
16.1.2	A weatherproof kit should be available to increase the IP Rating of the wall sounder to IP66.	
16.1.3	The Wall Sounder sound output should be variable between 90 dB(A) and 102 dB(A).	
16.1.4	The flash frequency should be 0.5/1 Hz.	
16.1.5	Meet the cubic light volume coverage requirements of EN54-23.	
17.1.1	The Project beam smoke detectors shall consist of an emitter and a receiver pair. Operate over a 5 – 100 metre range.	
18.1.4	The Translator module should incorporate an integral short-circuit isolator.	
20.1.1	Multi-criteria sensor (smoke and heat A1R type).	
20.1.3	Sensor shall support self-configuring Mesh network which enable device to choose which expander to connect to, depending on signal path strength.	
21.1.2	The device should be supplied with reset key and mounting kit.	

**ANNEXURE-I**

<b>S.No.</b>	<b>Requirement Description</b>	<b>Compliance (Yes / No)</b>
<b>A</b>	<b>General Specifications</b>	
1	The Datacenter Infrastructure Management System (DCIM) must not be a "Make In China" product and the OEM must have its Development & Support Center in India.	
2	The DCIM tool should become the manager of managers (MOM) for all other SCADAs (electrical) and Management platforms (BMS) used in the Datacenter and the building. The command control center should cater for physical and cyber security. It should be able to detect, collect, register and manage information on infrastructure elements like Power, Cooling, Access Control, Surveillance, Communication, Rack space, Assets and finally dashboards on Operational status of the data center. Should be able to track RCA (root cause analysis) for any fault quickly.	
3	The platform should be Fault Tolerant, High Available and Future Scalable despite any architectural change.	
4	Solution should have mimics for Individual racks in 2D with information on temperature, humidity status etc, readily available. It should also have status in 3D to manage all the non IT components, like LT Panel, DG, UPS, and PDUs. The connectivity of each equipment electrically should be clear with a MIMIC SLD	
5	Any threshold based alert or push-in alert from any electro mechanical equipment or IOT sensor, should be highlighted on the screen. At the same time an incident should be created, which should be sent to the services team, with an SLA to be rectified. This process should be able to set the RAMS process in perspective	
6	Solution should provide a real look and feel of the equipment's exactly as they are placed in the racks and the equipments like LT Panel, DG sets, UPS, etc. So that its easy to reach out to them whenever they need to be Accessed.	
7	Platform should have Impact analysis as one of the key techniques in DC. It should analyze the impact of one equipment on a dependent equipment. The Key parameter for DCIM platform: 1. Impact analysis of rack provisioning on power demand and cooling requirements. 2. Impact of cooling design on the Infrastructure Assets. 3. Prediction on energy wastage. 4. Forecasting on productive and standby systems 5. Impact of communication latency on assets. A central solution should be able to manage multi locational DCs from a single site.	
8	Following facility infrastructure is required to be monitored and then managed adequately: UPS, Temperature and humidity sensors (air- conditioning), DG working and its Fuel Tanks, CCTVs, PDUs, Fire Detection. The idea is to bring in operational and energy efficiency in the whole of the datacenter building.	
<b>B</b>	<b>Functional Specifications.</b>	
1	The proposed DCIM solution should have an ability to track and manage all data center assets like: DGs, UPS, Isle PDUs, iPDUs, PACs, CRAC units, WLD, RRD, FAS, VESDA and Environmental sensors.	
2	Should encompass more than simply locating a data center asset, however it also should provide detailed information about the assets.	

3	Tool should provide the information about equipment's dependency on each other. This affects the overall performance of the datacenter. Performance data of each perform or replaced in time within the DLP period and beyond. equipment in the datacenter should be available for analysis. Thus any product vendor for a under-performing asset can be alerted and the inventory is either repaired to	
4	The system shall provide an easy method of searching and locating assets and asset groups	
5	The system shall support importing of a asset list from a 3rd party tool in CSV format into an asset database. If a specific asset in not defined, the tool shall be able to create it.	
6	The system should allow the user to create Asset profile with unique serial no, asset tag, asset owner, asset life, details of assets etc.	
7	The system should allow the user to track assets at any time to know the status of an asset – location, using by whom, contract renewal for maintenance etc.	
8	Ability to define down time for Assets to conduct Maintenance activity	
9	The solution should perform the following general functions including, but not limited to: DCiE & PUE - Dashboard and reporting for DCiE and PUE should be readily available. Third Party Integration - The tool should have both north and south bound gateways. It should also allow gateway level integration with 3rd party interfaces like BACnet and Modbus RTU, TCP/IP whenever needed. Integration- Solution should support for third party integration via. SOAP, XML, Web services, SNMP-v1,v2,v3, Restful API)	
<b>C</b>	<b>Visualization</b>	
1	The solution floor plan view shall be able to represent the data center in both Rack view and 3D view.	
2	The floor plan view shall display a visual representation of the actual data center floor complete with all racks, critical infrastructure and sensor infrastructure displayed on the floor. Requisite alarm should be generated and the maintenance team doesn't have any problem in reaching the spot (for which a ticket was generated).	
3	The solution shall provide an ability to import CAD representations of the existing data center in a PNG or SVG or EPS format.	
<b>D</b>	<b>Monitoring, Alarming &amp; Notification</b>	
1	Solution should be capable to monitor all the devices that can provide information over various industry standard protocols as mentioned below: IP, Modbus RTU, Modbus TCP/IP, BACnet, SNMP v1/2/3, NO/NC. Additionally the solution should support alarm monitoring and response via these API's, JSON, REST, SOAP, XML.	
2	Solution should have the ability to integrate with existing systems as well as with end devices simultaneously and provide the holistic view of the complete data center infrastructure. Existing system could be e.g. BMS.	
7	Solution should be able to provide a visual indication of an "alarming condition" on the GUI wrt any device which is getting monitored. This should enable operators to check on the device under problem.	
11	The system should be capable enough to store the raw data or as polled data, for at-least for 365 days. It should also have the facility to automate the backup process or allow us to take manual backup, in case if it is required.	

17	Monitoring system should be capable of sorting and filtering events in accordance with their priority to the level required by the operator.	
19	The solution should be capable of getting trending of all the important equipment's, whose failure can disturb the production of any Data center	
<b>E</b>	<b>Cooling Management</b>	
1	System should be able to represent the environmental condition of the data center area in terms of temperature and humidity, on the same dashboard where operational parameters of air conditioning are getting monitored. This would enable us to take necessary steps to optimize the PAC/AC settings and bring down energy usage/bill.	
2	System should have the capability to collect and integrate the energy consumption data from all the components which are affected by the HVAC and PAC systems respectively to produce the total energy consumption data. Reports for us to understand the cost of operations.	
3	System should be able to provide trend reports on the energy consumption pattern by the air conditioning systems and their run-hours for data center. These reports would help the authorities to understand and fine tune its process to increase the operational efficiency in the DC operations.	
<b>F</b>	<b>Energy Management</b>	
1	The system should be capable of integrating with the mains, DG, UPS, PDU, rectifier, energy meter for continuous monitoring of its health. The battery health of the UPS should also be showcased.	
2	System should be able to integrate the Transformer and LT section of the DC. We should be able to nomenclate every circuit breaker to the end equipment visually, so that all electrical problems are immediately tracked to the route. It should also be able to do AMR (automated meter reading) to keep track of daily energy usage.	
7	The solution should provide visual representation of the datacenter environment specially to view the power consumption status in the racks at one go.	
8	The solution should be ready to integrate to IP power strips to get information of the power being consumed in the racks in real time and use this information for provisioning of servers inside any communication room.	
9	Solution should provide power efficiency dashboards such as PUE and DCIE and shall be able to calculate at multiple levels.	
<b>G</b>	<b>Centralized Reporting &amp; Dashboard</b>	
1	The dashboard and reporting engine should provide, centralized view as the face of all the elements in the Non-IT infrastructure (physical security, safety & energy) at DC.	
2	Web-based interactive reporting for business users, Rich graphical report designer for power users, Parameterized reports with powerful charting, Output in popular formats: HTML, CSV, PDF.	
3	Intuitive & rich graphic designer to create customized reports, such as: DC-PUE (enable us to measure how much energy is getting consumed in IT and how much in DC infrastructure). PUE: Live, last week, last month.	
4	Solution should provide us a comprehensive centralized dashboard for health monitoring of Data Center (non-IT infrastructure) components like: UPS, DG, PAC, Electrical systems & Temp. & RH sensors etc.	



5	It should have the ability to connect and provide datacenter environment reports like power consumption in racks in real time, temperatures within racks, rack door closers, water level sensing etc.	
6	Comparative analysis of Energy usage of the DC on monthly basis. Weekly and Monthly trend of the power of the Mains & Genset supply.	

## ANNEXURE-I

### 3.12 Addressable Fire Escape Emergency Lighting systems

Sl.No.	Description	Compliance (Yes / No)
1.1.0	Furnish a complete Addressable Fire Escape route Emergency Lighting System shall be designed to meet the requirements of BS5266 pt1.	
1.1.1	Each lighting final sub-circuit shall be individually monitored by use of a DIN rail mounted phase monitor. The phase monitor shall be microprocessor controlled and detect the presence or absence of the mains supply in accordance with the parameters laid down in BS EN 60598-2-22. System shall works on extra Low voltage.	
1.1.2	The cable that interconnects the luminaires, I/O units and the panel shall be a screened and twisted single pair 1.5mm <sup>2</sup> cable with a maximum length of up to 1000M.	
2.1.1	The fire detection system shall be designed, installed and commissioned in accordance with : BS5266.	
2.1.2	Emergency Lighting Control Panel (Approved as per BS EN 60598-2-2 by LIA laboratories ltd) .	
2.1.3	The products will meet the requirements of the Construction Products Regulation (CPR) and Certificates of Constancy of Performance prepared by the approval body, will be available from the manufacturer.	
3.1.1	Manufacturers of system product supplied will have been in the business of manufacturing Fire Alarm products for at least 5 years.	
3.1.4	Letter of authorisation from OEM on the same and specific to the tender: Certificate / authentication from the OEM related back-to-back warranty for 1 year and product / service support for (1+5) Years is mandatory requirements at the time of biding.	
4.1.1	<b>Function:</b> The ELCP shall consist of a sheet steel enclosure with a white powder coat finish and contain an internal termination board for all incoming and outgoing cables.The panel shall have space for one 12V 7.2 Ah Sealed Lead Acid batteries.	
4.1.2	ELCP shall works on Extra Low voltage.	
4.1.3	The panel shall support up to two circuits of addressable luminaires, exit signs and Input/output modules. Each circuit shall be able to support 127 addresses.	
4.1.4	The ELCP shall include a minimum of one RS232 serial data ports, with an expansion card for an additional one RS232/485 ports.	

4.1.5	The ELCP shall include a serial output which will allow up to 15 panels to be connected via an existing or dedicated TCP/IP Ethernet network to a graphical interface.	
4.1.5	The panel shall derive its power from an externally mounted 35V a.c. from transformer. Transformer having 230V ac input with 35V A.c output.	
5.1.1	The ELCP Key Pad shall have a transactions log of the last 500 events. Subsequent events should overwrite the log on a FIFO principle. The data shall be held in non-volatile memory.	
5.1.2	It shall be possible to initiate a battery status check to allow the operator to view the capacity of the battery within each luminaire.	
5.1.3	It shall be possible to initiate a manual test of the emergency lighting luminaires. The duration of which shall be selectable from 10 minutes in increments of 10 minutes up to a maximum of 180 minutes.	
5.1.4	Display : The user interface shall consist of an illuminated alpha-numeric membrane keypad, with a group of "soft keys" to be used in conjunction with a graphic based 128x64 pixel backlit LCD display .	
5.1.5	It shall be possible to connect up to eight user interfaces on an RS485 bus to the ELCP.	
6.1.1	20 m viewable exit light with a flexible 'flex it' hinge solution. Shall compliance with ISO7010.	
6.1.2	Complies with BS5266 . Approved as per BS EN 60598-2-2 by LIA laboratories ltd.	
6.1.3	LED technology	
6.1.4	Integral stand-by battery up to 3 hrs backup in emergency conditions. Battery Shall be Polymer Lithium-Ion technology and incorporate over voltage, over current and deep discharge protection circuitry. Battery shall have provision of charging only on extra low voltage, Main lighting charging source is not allowed.	
6.1.5	Operating voltage (max):- 41V. Exit Signage shall have bi-coloured LED indicating charge/fault status (green for charging, red for fault).	
6.1.6	Electronically addressed with IP20.	
6.1.7	Operating temperature :- 20°C to +40°C.	
	Complies with BS5266 . Approved as per BS EN 60598-2-2 by LIA laboratories ltd	
7.1.1		
7.1.2	LED technology	
	Integral stand-by battery up to 3 hrs backup in emergency conditions. Battery Shall be Polymer Lithium-Ion technology and incorporate over voltage, over current and deep discharge protection circuitry. Battery shall have provision of charging only on extra low voltage, Main lighting charging source is not allowed.	
7.1.3	Electronically addressed with IP20. Luminaire shall have bi-coloured LED indicating charge/fault status (green for charging, red for fault).	
7.1.4	Operating voltage (max):- 41V	
7.1.5	Operating temperature :- 20°C to +40°C.	
7.1.6	Complies with BS5266 .Approved as per BS EN 60598-2-2 by LIA laboratories ltd	
8.1.1		
8.1.2	LED technology	

8.1.3	Integral stand-by battery up to 3 hrs backup in emergency conditions. Battery Shall be Polymer Lithium-Ion technology and incorporate over voltage, over current and deep discharge protection circuitry. Battery shall have provision of charging only on extra low voltage, Main lighting charging source is not allowed.	
8.1.4	Electronically addressed with IP20.Luminaire shall have bi-coloured LED indicating charge/fault status (green for charging, red for fault).	
8.1.5	Operating voltage (max):- 41V	
8.1.6	Operating temperature :- 20°C to +40°C.	
8.1.1	Complies with BS5266 .Approved as per BS EN 60598-2-2 by LIA laboratories ltd	
8.1.2	LED technology	
8.1.3	Integral stand-by battery up to 3 hrs backup in emergency conditions. Battery Shall be Polymer Lithium-Ion technology and incorporate over voltage, over current and deep discharge protection circuitry. Battery shall have provision of charging only on extra low voltage, Main lighting charging source is not allowed.	
8.1.4	Electronically addressed with IP20.Luminaire shall have bi-coloured LED indicating charge/fault status (green for charging, red for fault).	
8.1.5	Operating voltage (max):- 41V	
8.1.6	Operating temperature :- 20°C to +40°C.	
9.1.1	4 inputs - can be configured as opening or closing.	
9.1.2	Operating Voltage: 20V – 40 V	
9.1.3	2 outputs - can be configured as N/O or N/C.	
10.1.1	Triggers at 75% of the nominal lighting circuit supply	
10.1.2	Power and output indications	
10.1.3	DIN Rail mounted	

## ANNEXURE-I

### 3.13 Very Early Smoke Detection Apparatus (VESDA) Systems

S.No.	Description	Compliance (Yes / No)
1	The installation of the VESDA system shall comply to one or more of the following codes and standards:IS-2189 (Indian Standard), NFPA Standard USA, British Standard-BS 5839 Part-I.	
2	The equipment shall be designed, tested, approved and listed by at least one of the below standards <ul style="list-style-type: none"> <li>• LPCB (Loss Prevention Certification Board), UK</li> <li>• FM (Factory Mutual), US</li> <li>• UL (Underwriters Laboratories Inc.), US</li> <li>• UL (Underwriters Laboratories Canada), Canada</li> </ul>	
3	The system shall consist of a highly sensitive LASER-based smoke detector, aspirator and filter.	

4	The system shall provide very early smoke detection and provide multiple output levels corresponding to Alert, Action, and Fire	
5	The system shall monitor for filter contamination automatically	
6	The system shall have a clean air supply to maintain laser chamber cleanliness all the time	
7	Monitoring contamination of the filter (dust & dirt etc.) and to notify automatically when maintenance is required.	
8	Monitoring contamination of the filter (dust & dirt etc.) and to notify automatically when maintenance is required.	
9	Equipment shall include a high level interface with the fire alarm system & BMS	

#### ANNEXURE-I

#### 3.14 Water Leakage Detection Systems

S No.	Description	Compliance (Y/N)
1	The Addressable Water leak Control Panel shall have expandable capacity from 1 loop to 2 loops. The Single loop in Panel can support up to 254 Leak alarm probes, or over 12,000m of water leak detection cable, Dual loop can support in excess of 500 leak alarm probes and over 25,000m of water leak detection cable. The control panel configuration allows each addressable device to be uniquely identified, remote outputs fully configurable. The RS485 panel expansion bus supporting up to 32 additional accessories.	
2	The Water leak Detection Cable shall have standard combination of length for simple connection and termination, consistent sensitivity.	
3	The Point type Water leak floor probe shall be mechanically robust, Ideal for refrigeration drip trays and floor voids, Available in Height adjustable clip option	
4	The Water leak Alarm activated sounder features to deliver sound when activated by a water leak or Service alarm.	

5	Leak Alarm Manual Call Point. The Call point shall features Non-frangible element, Surface mount fit (c/w back box), Robust design, Resettable with supplied key	
6	Water leak detection system must have capabilities to integrate with monitoring tools like BMS/ DCIM	

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

### 3.15 Fire Suppression System

Supply, install, test and commission NOVEC 1230 (Fluro Ketone FK-5-1-12) based fire suppression system. The fire suppression system shall include and not be limited to gas release control panel, CCOE approved seamless cylinders, discharge valve (with solenoid or pneumatic actuator) as the case may be, discharge pipe, check valve and all other accessories required to make a complete operation system meeting applicable requirements of NFPA 2011 standards and installed in compliance with all applicable requirements of the local codes and standards. Location of NOVEC cylinder is to be in existing BMS room.

### 3.16 Rodent Repellent System

Bidder is required to propose Rodent Repellent system to protect all the equipment, areas with relevant type of high frequency sound producing device called satellites or transducers. The devices can be tested periodically by means of a test switch provided on Main console.

## **4 General terms and conditions**

### **4.1 Definitions**

In this Contract, the following terms shall be interpreted as indicated:

#### **4.1.1 Solution**

means supply, installation, testing, commissioning, training and maintenance of all the components of the Data Centre seamlessly integrated to work together to meet the Technical and functional requirements of IIT Delhi indicated in this document.

#### **4.1.2 Director, IIT Delhi**

will mean Director, IIT Delhi or officers of IIT Delhi duly appointed/authorised by Director, IIT Delhi for the purpose.

#### **4.1.3 Supplier**

is the successful Bidder who has been determined to qualify to perform the Contract satisfactorily, and whose Bid has been determined to be substantially responsive, and is the lowest evaluated Bid.

#### **4.1.4 The Contract**

means the agreement entered into between IIT Delhi and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein;

#### **4.1.5 The Contract Price**

means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;

#### **4.1.6 The Product**

means all of the software, all hardware, database, middleware, operating systems, equipment/machinery and/or other materials which the Supplier is required to supply to IIT Delhi under the Contract;

#### **4.1.7 The Services**

means those services ancillary to the supply of the Products, such as transportation and insurance, installation, commissioning, customisation, provision of technical assistance, training, Maintenance and other such obligations of the Supplier covered under the Contract;

#### **4.1.8 TCC**

means the Terms and Conditions of Contract contained in this section;

#### **4.1.9 The Project Site**

means the buildings and other locations of IIT Delhi specified for the construction of the Data Centre.

#### **4.1.10 System**

means a Computer System consisting of all Hardware, Software, etc., which should work together to provide the services as mentioned in the Bid and to satisfy the Technical and Functional Specifications mentioned in the Bid.

#### **4.1.11 Software**

means Application/System software, Database, Middleware and other third party utilities which will seamlessly integrate with the environment described in this document without any hitch or hindrance.

#### **4.1.12 Site**

shall mean site of Contract work as shown on the Drawings and any other land allotted by IIT Delhi for specific use during this Contract period.

#### **4.1.13 Contract**

shall mean the notice inviting the Tender, Articles of Agreement, Contract conditions, special conditions, schedules, specifications in the form of Tender document including (not limited to) terms/ conditions. Drawings, specifications, price schedules attached here to and duly signed by Director, IIT Delhi and Contractor including such deviations to Tender terms signed and accepted by both Director, IIT Delhi and Contractor, as per Contract document and accepted correspondence/ corrections/ communications etc.

#### **4.1.14 Specifications**

shall mean any terms specifying Director, IIT Delhi requirements pertaining to the Contract - technical/ commercial/ others annexed to the Contract including detailed specifications, drawings, general/ special conditions of Contract.

#### **4.1.15 Contract Amount/Value**

Total amount/value of the work under the scope of Contract.

#### **4.1.16 Plant, Equipment, Work**

This shall mean and include material, plant and equipment to be supplied and/ or erected by the Bidder or any other related work under the Contract.

#### **4.1.17 Tests**

shall mean all the tests to be carried out during pre-commissioning/ on completion/ works as per this Contract and as per relevant IS specifications.

**4.1.18 Engineer** shall mean the person approved by IIT Delhi, acting under the orders of Director, IIT Delhi. The Contractor shall offer the Engineer every facility and assistance. The Engineer will have power to give notice to the Contractor/ their representative regarding non-approval of work; and such work shall be suspended/ discontinued till written decision of IIT Delhi is obtained

#### **4.1.19 Notice in writing**

shall mean a communication written by hand, typed or printed characters given to authorised employee of Contractor.

In case of a difference of opinion on the part of the Bidder in comprehending and/or interpreting any Clause/Provision of the Bid Document after submission of the Bid, the interpretation by IIT Delhi shall be binding and final on the Bidder.

### **4.2 Country of Origin/Eligibility of Goods and Services**

#### **4.2.1**

All goods and related services to be supplied under the Contract shall have their origin in eligible source countries, as per the prevailing Import Trade Control Regulations in India.

#### **4.2.2**

For purposes of this clause, origin means the place where the goods are mined, grown, or manufactured or produced, or the place from which the related services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognised product results that is substantially different in basic characteristics or in purpose or utility from its components.

#### **4.2.3**

The Origin of goods and services is distinct from the nationality of the Bidder.

### **4.3 Standards**

#### **4.3.1**

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods country of origin. Such standards shall be the latest issued by the institution concerned.



#### **4.3.2**

Makes of the standard bought-out equipment: The make of the bought-out/ standard products are specified in the Tender. In case some other equivalent makes are to be used, the Contractor shall specify makes of the equipment offered. These shall be reputed makes and shall be subject to the approval of Director, IIT Delhi. The Manufacturer's drawings and catalogues shall be submitted in 4 sets, within 4 weeks of date of award of the order or letter of intent. In any case this shall be before actual installation/ use of the equipment/ material at site. The operating instructions and maintenance manuals shall be handed over immediately on commissioning.

#### **4.3.3**

Warranties for OEM products are provided only on a pass-through basis. There are no implied conditions or warranties.

### **4.4 Use of Contract Documents and Information**

#### **4.4.1**

The Supplier shall not, without prior written consent from IIT Delhi, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of IIT Delhi in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.

#### **4.4.2**

The Supplier shall not, without prior written consent from IIT Delhi, make use of any document or information for purposes of performing the Contract.

#### **4.4.3**

Any document, other than the Contract itself, shall remain the property of IIT Delhi and shall be returned (in all copies) to IIT Delhi on completion of the Supplier as per performance under the Contract, if so required by IIT Delhi.

#### **4.4.4**

The bidder shall sign a non disclosure agreement according to a mutually agreed format.

#### **4.4.5**

There should be no advertisement or reference to the IIT Delhi Data Centre in any kind of publicity or future business purposed without explicit consent from IIT Delhi.

### **4.5 Patent Rights**

#### **4.5.1**

Each party grants only the licenses and rights specified in this Agreement. No other licenses or rights (including licenses or rights under patents) are granted either directly, by implication, or otherwise. Each party shall retain ownership of its respective pre-existing intellectual property rights.

If a third party claims that an unaltered Bidder manufactured product provided to IIT Delhi infringes that party's patent or copyright, Bidder will defend IIT Delhi against that claim at Bidder's expense and pay all costs, damages and attorney's fees that a court finally awards. IIT Delhi shall provide Bidder with prompt notice of such claim and allow Bidder to control the defence of such claim

#### **4.6 Performance Security**

##### **4.6.1**

Within the period of 7 days from Date of receipt of notification of Contract award, the Supplier shall furnish to IIT Delhi, the Performance Security for an amount of 3% of Contract value valid till the completion of the work (i.e. till the time IIT Delhi issues a Completion certificate).

##### **4.6.2**

The proceeds of the performance security shall be payable to IIT Delhi as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

##### **4.6.3**

The performance security will be discharged by IIT Delhi and returned to the Supplier as per the period specified in the clause above.

#### **4.7 Quality Control Tests**

##### **4.8 Manuals**

##### **4.8.1**

Before the products/system is/are taken over by IIT Delhi, the Supplier shall supply technical/systems Manuals for all the Software supplied and for all required interfaces. Operation and maintenance Manuals for all the systems and applications covering the operations needed to start, run, other operations, transfer to fall back system including business continuity plan to be provided by the vendor. The manuals shall be in English.

##### **4.8.2**

Unless and otherwise agreed the products and equipment shall not be considered to be completed for the purpose of taking over until such manuals have been supplied to IIT Delhi.

##### **4.8.3**

The Supplier shall provide one set of Design Manual, System Manual, User manual and Security Manual for the Application Software. The Supplier shall also provide one soft copy of each of the manuals. Soft and hard Copy Manuals shall be commensurate with number of installations of Products in IIT Delhi.

#### **4.9 System and other software**

For the System and other Software, the following will apply:

The supplier shall provide complete and legal documentation of all subsystems, licensed operating systems, licensed system software, licensed utility software and other licensed software. The supplier shall also provide licensed software for all software products whether developed by it or acquired from others.

The supplier shall also indemnify IIT Delhi against any levies/penalties on account of any default in this regard.

In case the primary vendor is coming with software which is not his proprietary software then the primary vendor must submit evidence in the form of agreement he has entered into with the software vendor which includes support from the software vendor for the proposed software for the full period required by IIT Delhi.

#### **4.10 Acceptance Procedure**

##### **4.10.1**

On successful completion of installation, commissioning, acceptability test, receipt of deliverables, etc., and after the solution runs successfully for six months after going live and IIT Delhi is satisfied with the working on the system, the acceptance certificate (as mutually decided and approved by IIT Delhi) signed by the Supplier and the representative of the Purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the systems.

Based on demonstration of following technical parameters, the DC implemented solution will be accepted.

- Equipment supplied and installed as per tender specifications defined in respective sections.
- PUE should not be more than 1.45 on the design load.
- Validating UPS redundancy operation for system by switching ON and OFF specific breakers.
- Room Temperature and humidity – Measurement at various points inside data center to work out the hot and/or humid pockets.
- Demonstration of UPS system on balanced as well as unbalanced load conditions along with FFT analysis which include harmonics in voltage as well as Current, voltage regulations under No load to full load. Neutral to Earthing Voltage at UPS output should not be more than 3 volts.
- Factory Acceptance Testing (FAT) report of each equipment.
- Demonstration of UPS operation under EB failure condition and EB restoration condition.
- Demonstration of Battery backup under full load condition.
- Demonstration of operation of Chiller & PAC
- Demonstration of DG operations for AMF, Auto Synchronization with existing and load demand start and stop and equal load sharing with existing DG sets.
- Demonstration of creating false fire signal (Cross Zoning Input) and checking operation of magnetic coil on NOVEC cylinder manifold.
- Demonstration of VESDA, Water Leak Detector system
- Safety during Project Execution
- Submission of Warranty Certificate from respective manufacturer(s) of DG set, UPS, Battery, Pumps etc. as per RFP
- Effective GUI in BMS screen, Effective implementation, and utilization of BMS system. Monitoring of all field devices including Humidity, temperature sensors etc. on BMS screen, Control through BMS in Automatic mode as well as Manual mode (Manual mode should be on BMS screen as well as Hard Wiring) of all actuators' equipment etc as per operating, failure, and failsafe logic.
- Demonstration of operation of AHU for Basement rooms cooling along with individual rooms cooling, operation of fire Damper etc.
- Demonstration of water quality sensors by checking the water quality at external lab and cross checking the parameters.
- Clear and current escalation matrix is made available till the relevant CTO/CFO/CEO/CxO.
- Data Centre aesthetics and interiors

#### **4.11 Packing of Products**

##### **4.11.1**

The Supplier shall provide such packing of the products as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperature, salt and precipitation during transit and open storage. Size and weights of packing case shall take into consideration, where appropriate, the remoteness of the Products final destination and the absence of heavy handling facilities at all transit points.

##### **4.11.2**

Packing Instructions: The Supplier will be required to make separate packages for each Consignment. Each package will be marked on three sides with proper/indelible ink with the following: (i) Project; (ii) Contract No.; (iii) Country of Origin of products; (iv) Supplier's Name; (v) Packing List reference number.

#### **4.12 Delivery and Documents**

##### **4.12.1**

Delivery of the Products/Software shall be made by the supplier in accordance with the system approved/ordered. The details of the documents to be furnished by the Supplier are specified hereunder:

- 1.3 copies of Supplier's Invoice showing Contract number, Products description, quantity, unit price and Total amount.
2. Delivery Note or acknowledgement of receipt of Products from the Consignee or in case of products from abroad original and two copies of the negotiable clean Airway Bill.
- 3.2 copies of packing list identifying contents of each package. . Manufacturer's/Supplier's warranty certificate.
4. Inspection certificate issued by the nominated inspection agency, if any, and the Supplier's factory inspection report and Quality Control Test Certificates.
5. Certificate of Origin.

The above documents shall be received by IIT Delhi before arrival of Products (except where it is handed over to the Consignee with all documents) and if not received the Supplier will be responsible for any consequent expenses.

#### **4.13 Transportation**

##### **4.13.1**

Where the Supplier is required under the Contract to transport the Goods to a specified place of destination within India, defined as the Project Site, transport to such place of destination in India, including insurance and storage, as shall be specified in the Contract, shall be arranged by the Supplier, and the related costs shall be included in the Contract Price.

#### **4.14 Incidental Services**

##### **4.14.1**

The incidental services to be provided are as under:

1. Furnishing Manuals for each appropriate unit of the Supplied Products as mentioned under the relevant Clauses.
- 2.(b) Maintenance and software updates of the supplied Products, Technical support thereof for a period as specified in the relevant Clause after expiry of the warranty provided that this service shall not relieve the Supplier of any warranty obligations under this contract.

#### **4.15 Warranty**

##### **4.15.1**

The Supplier warrants that the products supplied under the Contract are of the most recent version and that they incorporate all recent improvements in design and/or features. The Supplier further warrants that all the Products supplied under this Contract shall have no defect, arising from design or from any act of omission of the Supplier that may develop under normal use of the supplied products in the conditions prevailing in India

##### **4.15.2**

The minimum warranty/AMC period shall be 60 months from the date of commissioning and acceptance of the work in totality. The Supplier shall, in addition comply with the performance 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 make such changes, modifications and/or additions to the Products 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.

Commented [MA1]: Check Warranty

##### **4.15.3**

IIT Delhi shall promptly notify the Supplier in writing of any claims arising under this warranty.

##### **4.15.4**

Upon receipt of such notice the Supplier shall with all reasonable speed, repair or replace the defective products or part thereof without cost to IIT Delhi. The response time should not be more than half an hour and the resolution time should not be more than 4 hours.

##### **4.15.5**

If the Supplier, having been notified, fails to remedy the defect(s) within the period specified above, IIT Delhi may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights, which IIT Delhi may have against the supplier under the Contract.

##### **4.15.6**

Preventive Maintenance of equipment like UPS, AC, Generator etc. for all the products will be within the scope and needs to be undertaken by the bidder

#### **4.15.7**

During the warranty period vendor shall repair/replace at the installed site, at no charge to IIT Delhi, all defective components that are brought to the Vendor's notice. Warranty should not become void, if IIT Delhi buys, any other supplemental hardware from a third party and installs it within these machines under intimation to the vendor. However, the warranty will apply to such supplemental hardware items installed.

#### **4.15.8 Uptime**

During Warranty Period/AMC, Supplier guarantees an Uptime of 99.98% on quarterly basis for the entire turnkey solution provided.

#### **4.16 Maintenance Service**

##### **4.16.1**

The Supplier shall provide free maintenance services during the period of warranty. After warranty period, the Supplier will do annual maintenance of the entire system, for a period of 1 year after the defect liability period (Warranty) of 12 months. The cost of AMC will be considered for evaluating the L-1 criteria in the price bid. During the period of AMC, if the service provided by the bidder is not satisfactory, IIT Delhi reserves the right to terminate the AMC contract and appoint any other agency. During the period of AMC, the bidder to submit Bank guarantee from Nationalised/Scheduled Bank in India, equivalent to the 3% amount quoted in the AMC contract per year for a period of the contract or renew existing PBG

##### **4.16.2**

During maintenance period also, the Supplier guarantees on quarterly basis an uptime of 99.98% of the entire solution provided. Accordingly, it is expected that necessary redundancy is built into the provided solution for all components whether software or hardware and response time for maintenance complaint from the site installation should be kept minimum so as to maintain uptime of 99.98%.

#### **4.17 Training**

##### **4.17.1**

Vendor must provide training to IIT Delhi Technical Staff as per schedule and venue to be agreed upon mutually.

#### **4.18 Payment to the contractor**

1. 70% payment of the cost of the equipment against complete delivery of the equipment and related accessories,
2. 20% payment of the cost of the equipment upon the complete installation of the equipment and related sub-systems.
3. Remaining payment of the work order will be released upon receipt of Bank Guarantee from Indian nationalised/commercial bank for 10% of total Order value towards performance bank guarantee to be valid for the period of warranty including extension if any, from the date of installation. If no Bank Guarantee is given, the balance 10% will be paid after assessing, after sales service during warranty period i.e. payment after warranty period.

4. Services payment schedule - Quarterly payment against satisfactory performance as per SLA.
5. IIT Delhi will make all payments within a period of 30 days of raising an invoice provided all conditions for the payment are satisfied.

#### **4.19 Prices**

##### **4.19.1**

Prices payable to the Supplier as stated in the Contract shall be firm and not subject to adjustment during performance of the Contract, irrespective of reasons whatsoever, including exchange rate fluctuations, changes in taxes, duties, levies, charges, etc. Also the Law of Land shall be applicable in this case i.e. that any burden or benefit due any increase or decrease in government imposed taxes, levies shall be passed on to IIT Delhi

#### **4.20 Change Orders**

##### **4.20.1**

The IIT Delhi may, at any time, by a written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

1. Method of shipment or packing;
2. Place of delivery;
3. Technical and functional specifications
4. Services to be provided by the Supplier.

##### **4.20.2**

If any such change causes an increase or decrease in the cost of, or the time required for the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of Supplier's receipt of IIT Delhi's change order.

#### **4.21 Contract Amendments**

No variation in or modification of the terms of the Contract shall be made, except by written amendment, signed by the parties.

#### **4.22 Assignment**

The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with IIT Delhi's prior written consent.

#### **4.23 Delays in the Supplier's Performance**

##### **4.23.1**

Delivery, installation, commissioning of the Products/Solution and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by IIT Delhi.

#### 4.23.2

If at any time during performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Products and performance of Services, the Supplier shall promptly notify the IIT Delhi in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, IIT Delhi shall evaluate the situation and may, at its discretion, extend the Suppliers time for performance, with or without liquidated damages, in which case, the extension shall be ratified by the parties by amendment of the Contract

#### 4.23.3

Except as provided in the above clause, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages, unless an extension of time is agreed upon without the application of liquidated damages.

#### 4.24 PENALTY/Liquidated Damages

Subject to the clause on <i>Force Majeure</i> in this Contract, if the Supplier fails to complete the commissioning of the basic infrastructure for the Data Centre before the scheduled completion date or the extended date or if the Supplier repudiates the Contract before the completion of the work, IIT Delhi, at its discretion, may without prejudice to any other right or remedy available to the Purchaser as under the Contract recover from the Supplier, as Liquidated Damages and not by the way of penalty as defined below:Measurement	Definition	Target	Liquidated damage
Detailed design and submission of documents	The Supplier should submit the design documents and technical specification documents of the equipment to be	Within 30 days of release of work order	0.2% of the total contract for every calendar day of delay



	installed		
Site preparation/ installation	<ul style="list-style-type: none"> <li>• Design and build the Data Centre partitions as per Data Centre space and layout requirements and</li> <li>• Procurement and installation of necessary Data Centre utilities infrastructure</li> </ul>	Within 150 days of release of work order	0.2% of the total contract for every calendar day of delay
Site acceptance and go live	The Supplier should facilitate the site acceptance testing by IIT Delhi before the commencement of live operations	Within 15 days of site preparation and Within 180 days of release of work order	0.25% of the total equipment cost for every non-compliance

Notwithstanding anything stated to the contrary, the aggregate of all penalties and liquidated damages under this Contract shall not exceed 15% of the Total Contract Price. Any penalty shall be levied only for reasons solely attributable to the Vendor. Penalty shall constitute the company's sole and exclusive remedy against the Vendor for such defect/delay.

#### 4.25 Limitation of liabilities

Except in case of gross negligence or wilful misconduct on the part of the Supplier or on part of any person or company acting on behalf of Supplier in carrying out the services, the Supplier, with respect to the damage caused by the Supplier to IIT Delhi's property, shall not be liable to IIT Delhi

1. for any indirect or consequential loss or damage; and
2. for any direct loss or damage that exceeds (A) the total payments payable under this contract to the Supplier hereunder, or (B) the proceeds the Supplier may be entitled to receive from any insurance maintained by the Supplier to cover such a liability, whichever is higher.

#### 4.26 Termination for Default

Either party may terminate the contract, with thirty days prior written notice, if the other party has committed a material breach of the contract and if such breach has not been cured during the notice period (30 days). IIT Delhi shall pay Bidder for all products and services provided up to the effective date of termination.

#### **4.27 Force Majeure**

##### **4.27.1**

Notwithstanding the provisions of TCC, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

##### **4.27.2**

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 restricted to, acts of the IIT Delhi in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

##### **4.27.3**

If a Force Majeure situation arises, the Supplier shall promptly notify IIT Delhi in writing of such condition and the cause thereof. Unless otherwise directed by IIT Delhi 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.

#### **4.28 Termination for Insolvency**

IIT Delhi may, at any time, terminate the Contract by giving written notice to the Supplier if the Supplier becomes Bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to IIT Delhi.

#### **4.29 Resolution of Disputes**

##### **4.29.1**

IIT Delhi and the Supplier shall make every effort to resolve amicably by direct informal negotiation, any disagreement or dispute arising between them under or in connection with the Contract.

##### **4.29.2**

If, the IIT Delhi and the Supplier have been unable to resolve amicably a Contract dispute even after a reasonably long period, either party may require that the dispute be referred for resolution to the formal mechanisms specified herein below. These mechanisms may include, but are not restricted to, conciliation mediated by a third party and/or adjudication in an agreed national forum.

##### **4.29.3**

The dispute resolution mechanism to be applied shall be as follows:

1. In case of Dispute or difference arising between IIT Delhi and the Supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. Where the value of the Contract is above |1.00 Crore, the arbitral tribunal shall consist of 3 arbitrators, one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by mutual discussion between the

Purchaser and the Supplier. The Arbitration and Conciliation Act 1996, the rules there under and any statutory modification or re-enactments thereof, shall apply to the arbitration proceedings.

2. Arbitration proceedings shall be held at Delhi, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English;

3. The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc., of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself;

#### **4.30 Governing Language**

The governing language shall be English.

#### **4.31 Applicable Law**

Notwithstanding anything stated herein this clause shall be only applicable to the extent of the Vendor being a company incorporated in India and as a provider of Information technology products and Services

##### **4.31.1**

The Contract shall be interpreted in accordance with the laws of the Union of India and the Bidder shall agree to submit to the courts under whose exclusive jurisdiction the Registered Office of IIT Delhi falls.

##### **LABOUR LAWS**

The contractor shall abide by the provisions of state/ central govt./local labour laws and discharge his obligations towards any liability arising out of such laws in respect of his workers/ sub contractors workers. In case, the contractor fails to comply with the law requirements, the Director, IIT Delhi will have to intervene and settle the demands/ disputes of the contractor or his sub contractors labour and debit the cost to the contractors account. The contractor shall maintain all such records for the attendance of his labour/ other people as may be required. In no case, the same would be mixed up with records of the Director, IIT Delhi/ his other contractors.

#### **4.32 Addresses for Notices**

##### **4.32.1**

The following shall be the address of IIT Delhi and Supplier.

Head, Computer Service Centre

IIT Delhi

Hauz Khas New Delhi 110016.

Supplier's address for notice purposes (To be filled in by the Supplier)

##### **4.32.2**

A notice shall be effective when delivered or on effective date of the notice whichever is later.

#### **4.33 Taxes and Duties**

##### **4.33.1**

The Supplier will be entirely responsible for all applicable taxes, duties, levies, charges, license fees, road permits, etc. in connection with delivery of products at site including incidental services and commissioning.

##### **4.33.2**

Tax deduction at Source: Wherever the laws and regulations require deduction of such taxes at the source of payment, IIT Delhi shall effect such deductions from the payment due to the Supplier. The remittance of amounts so deducted and issuance of certificate for such deductions shall be made by IIT Delhi as per the laws and regulations in force. Nothing in the Contract shall relieve the Supplier from his responsibility to pay any tax that may be levied in India on income and profits made by the Supplier in respect of this contract.

#### **4.34 Supplier's Integrity**

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.

#### **4.35 Supplier's obligations**

The Supplier is obliged to work closely with IIT Delhi's staff, act within its own authority and abide by directives issued by IIT Delhi and implementation activities.

The Supplier will abide by the job safety measures prevalent in India and will free IIT Delhi from all demands or responsibilities arising from accidents or loss of life, the cause of which is the Supplier's negligence. The Supplier will pay all indemnities arising from such incidents and will not hold IIT Delhi responsible or obligated.

The Supplier is responsible for managing the activities of its personnel or sub-contracted personnel and will hold itself responsible for any misdemeanours.

The Supplier will treat as confidential all data and information about IIT Delhi, obtained in the execution of his responsibilities, in strict confidence and will not reveal such information to any other party without the prior written approval of IIT Delhi.

#### **4.36 Patent Rights/Intellectual Property Rights**

Each party grants only the licenses and rights specified in this Agreement. No other licenses or rights (including licenses or rights under patents) are granted either directly, by implication, or otherwise. Each party shall retain ownership of its respective pre-existing intellectual property rights.

If a third party claims that an unaltered Bidder manufactured product provided to IIT Delhi infringes that party's patent or copyright, Bidder will defend IIT Delhi against that claim at Bidder's expense and pay all costs, damages and attorney's fees that a court finally awards. IIT Delhi shall provide Bidder with prompt notice of such claim and allow Bidder to control the defence of such claim

#### **4.37 Site preparation and installation**

The IIT Delhi will designate the installation site before the scheduled installation date, to allow the Supplier to perform a site inspection to verify the appropriateness of the site before the installation/commissioning of the hardware and software.

#### **4.38 Installation/Commissioning of Hardware/Software**

The Supplier is responsible for all unpacking and installation of Products. The Supplier will test all hardware/system operations and accomplish all adjustments necessary for successful and continuous operation of the hardware/software at all installation sites.

#### **4.39 Technical Documentation**

The Technical Documentation involving detailed instruction for operation and maintenance of the hardware (if any) and software is to be delivered. The language of the documentation should be English.

#### **4.40 Discretionary Right to use the product till replacement**

If after delivery, acceptance, and installation and within the guarantee and warranty period, the operation or use of the product is found to be unsatisfactory, IIT Delhi shall at its discretion may have the right to continue to operate or use such product until rectification of defects, errors or omissions by partial or complete replacement is made without interfering with IIT Delhi's operation.

#### **4.41 Safety and Labour laws**

Notwithstanding anything stated herein this clause shall be only applicable to the extent of the Vendor being a company incorporated in India and as a provider of Information technology products and Services

CONTRACTOR shall comply with the provision of all laws including Labour Laws, rules, regulations, and notifications issued there under from time to time. All safety and labour laws enforced by statutory agencies and by local bodies shall be applicable and the compliances of the same shall be the sole responsibility of the bidder under the performance of this CONTRACT and CONTRACTOR shall abide by these laws.

CONTRACTOR shall take all measures necessary or proper to protect the personnel, work and facilities and shall observe all reasonable safety rules and instructions. No smoking shall be permitted outside the living quarters, and welding jobs will be carried out with full safety precautions. The contractor's employees also shall comply with safety procedures/policy.

The CONTRACTOR shall report as soon as possible any evidence which may indicate or is likely to lead to an abnormal or dangerous situation and shall take all necessary emergency control steps to avoid such abnormal situations. Moreover the contractor shall get the entire necessary work site, employees and his personnel insured under CAR policy. However, that such liability shall be limited to 110% of the CONTRACT Price and other necessary insurance schemes as well as the acts such as Workmen's compensation Act, ESI Act and PF Act under the relevant acts of the Government as required for the execution of the project and shall consider the amounts arising out of the same in the bid quoted.

#### **4.42 Indemnity agreement**

Notwithstanding anything stated to the contrary in the RFP and regardless of the nature of claim, Bidder's aggregate liability for direct damages under this Contract shall not exceed the charges paid by IIT Delhi to Bidder for the individual product or service that is the subject of claim (if recurring, twelve months charges apply). This limit shall not apply to damages for bodily injury (including death) and damage to real property

and tangible personal property for which Bidder is legally liable. The Bidder shall in no event be liable for indirect, consequential, incidental or special damages, loss of/damage to, data and third party claims, even if Bidder has been advised of possibility of such damages

#### **4.43 Arbitration**

Except as otherwise provided elsewhere in the CONTRACT if any dispute, difference, question or disagreement arises between the parties here to or the respective representatives or assignees, at any time in connection with construction, meaning, operation, effect, interpretation or out of the CONTRACT or breach thereof the same shall be decided by an Arbitral Tribunal consisting of three Arbitrators. Each party shall appoint one Arbitrator and the Arbitrators so appointed shall appoint the third Arbitrator who will act as presiding Arbitrator.

In case a party fails to appoint an arbitrator within 30 days from the receipt of the request to do so by the other party or the two Arbitrators so appointed fail to agree on the appointment of third Arbitrator within 30 days from the date of their appointment, upon request of a party, the Chief Justice of India or any person or institution designated by him (in case of International Commercial Arbitration) shall appoint the Arbitrators/ Presiding Arbitrator. In case of domestic contracts, the Chief Justice of the High Court or any person or institution designated by him within whose jurisdiction the subject purchase order/contract has been placed/made, shall appoint the Arbitrator/ Presiding Arbitrator upon request of one of the parties.

If any of the Arbitrators so appointed dies, resigns, incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the concerned party/arbitrators to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left if both parties consent for the same; otherwise, he shall precede de novo.

It is a term of the CONTRACT that the party invoking arbitration shall specify all disputes to be referred to arbitration at the time of invocation of arbitration and not thereafter.

It is also a term of the Agreement that neither party to the Agreement shall be entitled for any antelate (pre-reference) or pendente-lite interest on the amount of the award.

The Arbitral Tribunal shall give reasoned award and the same shall be final, conclusive and binding on the parties.

The venue of the arbitration shall be the place from where the Agreement has been placed.

The fees of the arbitrators shall be borne by the parties nominating them and the fee of the presiding Arbitrator, costs and other expenses incidental to the arbitration proceedings shall be borne equally by the parties.

Subject to as aforesaid, the provisions of Arbitration and Conciliation Act, 1996 India and any statutory modifications or re-enactment in lieu thereof shall apply to the arbitration proceedings under this clause.

#### **4.44 Beneficiary for insurance policies**

Insurance policies mentioned in the respective clauses shall be taken within 10 days of award of the order/LOI. Director, IIT Delhi shall be the sole beneficiaries for these policies. Copies of these policies shall be produced when asked. If contractor fails to take out these policies within the stipulated period, Director, IIT Delhi reserve their right to take out these policies on contractor's behalf and debit the cost to contractors account

#### **4.45 Compliance to statutory rules/regulations/acts**

Notwithstanding anything stated herein this clause shall be only applicable to the extent of the Vendor being a company incorporated in India and as a provider of Information technology products and Services

The contractor will have to comply with all the rules/ regulations/ acts prescribed under the Factories Act, Provident Fund Act, ESI Act, Shops and Establishment Act, Workmen's Compensation Act and such other Acts and labour laws as may be applicable and any liability arising out of non observance of the regulations and Acts in respect of his employees, in respect of this contract work, will have to be fully assumed and met by the contractor. The contractor should ensure that he satisfies all the above regulations acts etc.

#### **4.46 Regulations**

The contractor and his employees shall observe all prevailing rules and regulations of working in IIT Delhi and modified/ upgraded/ amended from time to time.

#### **4.47 Site supervision and site instruction book**

The contractor shall deploy qualified and responsible engineer at site for site supervision and this engineer shall be available at site during working hours to take instructions and answer queries.

#### **4.48 Meetings**

Senior representative of the contractor along with the site engineer shall attend scheduled site meetings and make himself available for any other meetings with the Director, IIT Delhi as and when required at site. The contractor shall co-ordinate his work with those of other agencies and Director, IIT Delhi shall decide the priorities.

#### **4.49 Maintenance of records**

The contractor shall maintain at site proper record of the contract agreements, drawings, site instructions or any other records as requested by Director, IIT Delhi and shall make these available to Director, IIT Delhi as and when required during site visits. Safety instructions are discussed in detail in section 16.

#### **4.50 House keeping**

The contractor shall provide proper housekeeping, keep working place neat and clean and store materials neatly and properly at the closure of each day's work. Protecting electrical equipment from other contractor's activities (e.g., Painting, etc.) shall be contractor's responsibility with intimation to safety officers.

#### **4.51 TAC approval**

Installation shall be subject to approval of Tariff Advisory Committee (TAC) of Fire Insurance Association of India. Hence contractor shall use all materials approved by TAC and it would be contractor's sole responsibility to fill in insurance forms, prepare necessary drawings and submit the same to Fire Insurance Authorities and obtain their approval for the electrical installation. Materials under Director, IIT Delhi scope of supply shall be procured from suppliers approved by TAC.

#### **4.52 Access to work**

The Director, IIT Delhi and their representatives shall have access to the works and the workshops or other place of the Contractor where work is being carried out for the Contract and when work is to be so prepared in workshops or other places of a Sub-Contractor (whether or not a nominated Sub-Contractor.) at all reasonable times. The Contractor shall have a term in the Sub-Contract so as to secure a similar right of

access to those workshops or placed for the Director, IIT Delhi and his representatives and shall do all things reasonably necessary to make the right effective.

**4.53 Dismissal**

The Contractor shall on the request of the Director, IIT Delhi immediately dismiss from the works any person employed thereof by him who may in the opinion of the Director, IIT Delhi be incompetent or misconducts himself and such person shall not be again employed on the work without the permission of the Director, IIT Delhi



## 5 Operations and Management and Service Level Agreement

### 5.1 Introduction

#### 5.1.1 Document Purpose

To detail out the Scope for Operations and Maintenance support structure and ways to measure it to maintain the functionality of the Data Centre with minimum impact to business.

#### 5.1.2 Measurement of Service level

The purpose of this Service Level Agreement (hereinafter referred to as SLA) is to clearly define the levels of service which shall be provided by the Bidder to IIT Delhi for the duration of the 5 year contract.

#### 5.1.3 Definitions

For purposes of this Service Level Agreement, the definitions and terms as specified in the contract along with the following terms shall have the meanings set forth below:

**Uptime** shall mean the time period for which the specified services/components with specified technical and service standards are available to the state and user departments. Uptime, in percentage, of any component (Non-IT) can be calculated as:

$$\text{Uptime} = [1 - (\text{Downtime}/\text{Total Time})] * 100$$

**Downtime** shall mean the time period for which the specified services/components with specified technical and service standards are not available to the state and user departments and excludes the scheduled outages planned in advance, the link failures and reasons beyond vendor control.

**Incident** refers to any event/abnormalities in the functioning of the Data Centre Equipment/specified services that may lead to disruption in normal operations of the Data Centre services.

**Resolution Time** shall mean the time taken (after the incident has been reported at the help-desk), in resolving (diagnosing, troubleshooting and fixing).

### 5.2 Service Level Agreement

Utility	Criticality	Redundancy	SLA	Resolution time
HVAC and cooling	High	$N + 1$	99.98%	6 to 8 hours for minor complaints, 24 - 48 hours for major complaints
UPS	High	$N + N$	99.98%	6 to 8 hours for minor complaints, 24 - 48 hours for major complaints

Electrical infrastructure	High	N + N	99.98%	6 to 8 hours for minor complaints, 24 - 48 hours for major complaints
DG sets	High	N + 1	99.98%	6 to 8 hours for minor complaints, 24 - 48 hours for major complaints
Fire detection and alarm systems	High			within 24 hours
DCIM/BMS and real-time measurements	High			within 24 hours
VESDA system	High			within 24 hours
Fire suppression system	High			within 24 hours
CCTV system	Medium			within 48 hours
Rodent control	Low			within 72 hours
Water leak detection system	Medium			within 24 hours
Access control system	Medium			within 72 hours

### 5.3 Penalty

The SLA metrics provided specifies performance parameters as baseline performance, lower performance and breach. The SLA also specifies the penalties for lower performance and breach conditions. Payment to the successful bidder is linked to the compliance with the SLA metrics.

#### 5.3.1 Availability

Availability shall be calculated on quarterly basis. Availability will be based on the report of representative of IIT Delhi, based on system logs, equipment logs, downtime and rectification reporting etc. In case the availability for each of the system under Warranty/AMC is less than SLA the non-performance deduction from payments for the system under Warranty/AMC shall be as per the following table:

Availability	Non-performance deduction in each case
99.98% or above	No deduction
Less than 99.98% and up to 99%	2% of the annual maintenance contract value for the quarter
Less than 99% to 97%	10% of the annual maintenance contract value for the quarter
Less then 97%	Breach of Contract

### 5.3.2 Supply air temperature and humidity

The supply air temperature reading should be taken from the servers through DCIM. The temperature should be within  $24 \pm 2$  degree C and humidity should be as per ASHRAE 2019 thermal guidelines. The SLA will be on monthly basis.

Temperature/humidity at server inlet	Non-performance deduction in each case
Within limits	No deduction
Not within specified limits continuously for 30 minutes	0.5% of the annual maintenance contract value for the month
More than 4 breaches in a month	10% of the annual maintenance contract value for the month

### 5.3.3 Breach of PUE commitment

The PUE penalty will be recovered from Annual O&M Contract Value as below:

Availability (on annual basis)	Non-performance deduction in each case
Committed PUE@100% IT Load	25 Lakhs from Annual O&M Contract Value for every incremental 7.4% of the committed PUE value
Committed PUE@75% IT Load	20 Lakhs from Annual O&M Contract Value for every incremental 7.4% of the committed PUE value
Committed PUE@50% IT Load	15 Lakhs from Annual O&M Contract Value for every incremental 7.4% of the committed PUE value
Committed PUE@40% IT Load	10 Lakhs from Annual O&M Contract Value for every incremental 7.4% of the committed PUE value

- At intermediate loads levels the penalty will be linearly interpolated from the above table.
- In case of more than 20% breach in the committed PUE value, IIT Delhi reserves the right to termination the operation and maintenance contract.
- Non-measurement of PUE will amount to a 20% breach.
- **Incentives:** In case a better annualized PUE compared to what has been committed is delivered then an incentive amounting half of the penalties indicated in the above table will be due to the successful bidder.

#### 5.4 Operations and Maintenance

The Data Centre going live is one of the major milestones for any organisation. However, there is a lot of effort that goes into operating and maintaining the Data Centre. IIT Delhi emphasises the importance of the operations and maintenance aspect well in advance, at the stage of designing the Data Centre itself. Adequate care should be taken to ensure that the design can take care of providing high availability and strict service levels while at the same time keeping the operating costs low.

#### 5.5 Scope of services

- Submission of daily, weekly and monthly service performance reports in the format specified as per the requirement of the infrastructure facilities at the premises. Understanding and analysis of performance on periodic basis and providing technical recommendations for improvements.
- Measurement and monitoring of all aspects of the Data Centre.
- Analysing the readings and escalating for any abnormality observed.
- Supervising installation and maintenance work conducted by external vendors.
- Maintaining and updating of inventory of all sub-systems, infrastructure equipment and components.

Adequate onsite and offsite spare parts and spare components must be maintained by the successful bidder to ensure that the uptime commitment as per SLA is met. To provide this service it is important for the selected bidder to have back-to-back arrangement with the OEMs. The selected bidder would be required to provide a copy of the service level agreement signed with the respective OEMs. Any component that is reported to be down on a given date should be either fully repaired or replaced by temporary substitute (of equivalent configuration) within the time frame indicated in the Service Level Agreement (SLA). In case the selected bidder fails to meet the above standards of maintenance, there will be a penalty as specified in the SLA.

For ensuring desired uptime of the Data Centre, required Petrol/Diesel for running DG Set shall be provided by IIT Delhi as much required. The successful bidder shall ensure that adequate meters shall be installed at the raw power and alternate power through DG separately.

The brief scope of services that would be done under operations and maintenance of proposed IIT Data Centre would be as follows:

- Upkeep of overall uptime of the Data Centre as per SLA.
- Scope of Service includes Operation and Maintenance of the following system but not limited to
  - UPS systems and Batteries
  - DG
  - PDUs
  - All Electrical panels and Equipment.
  - Cooling Equipment
  - Chillers
  - Data Centre cooling units
  - Building Automation System
  - DCIM/BMS system

- CCTV system
- Water Leakage Detection System
- VESDA
- Fire Alarm System
- Fire Suppression System Access Control System – Other systems related to the DCs.

## **5.6 Daily checks**

### **5.6.1 Access Control System**

- 24x 7 checking of Access System for alert and alarms.
- Monitoring of Status.
- Abnormality of System/errors
- Access Card Activity
- Report of Access to Data Centre
- Report of Forceful Access (Invalid Access)
- Generation of Logs/reports and submission to FM Manager for review and necessary
- Maintenance of reports
- Testing and checking of all Doors, Magnetic locks and Sensors.

### **5.6.2 CCTV**

- Daily Checking of DVR System and Cameras
- Suspicious Action Report
- Abnormality of System
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

### **5.6.3 Fire Alarm System**

- Daily Checking of FAS Panel
- Immediate Action to Alarm Generated
- Monitoring of MCP
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

### **5.6.4 Novec 1230 Gas**

- Daily checking of Pressure of Gas.
- Release Panel Status
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

### **5.6.5 VESDA**

- Status of Panel

- Monitoring of Alarms.
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

#### **5.6.6 Water Leak Detection**

- Status of Panel.
- Monitoring of Alarms.
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

#### **5.6.7 Rodent Repeller**

- Status of Panel.
- Monitoring of Alarms.
- Generation of Logs/reports and submission to FM Manager for review and necessary action
- Maintenance of reports

#### **5.6.8 Precision AC and Comfort AC systems**

- Monitoring of critical parameters like temperature and humidity every half an hour physically.
- Monitoring of alarms and immediate action.

#### **5.7 Fire Drill Test**

Fire drill tests should be carried out at least once a month.

#### **5.8 Reports**

Apart from automatic logging of reports through DCIM, summary reports should be prepared as follows.

##### **5.8.1 Daily Reports**

- 1.Hourly basis monitoring of UPS, HVAC and other critical systems.
- 2.Reports of Energy meter reading of all meters.
- 3.Readings of main LTA Panel.
- 4.Fuel in DG fuel tank.
- 5.Immediate response to electrical complaints by any Working staff.
- 6.Following of effective power consumption chart provided by Customer.
- 7.Maintaining Critical Electrical parts.
- 8.Generation of Logs/reports and submission to FM Manager for review and necessary action.
- 9.Maintenance of reports

##### **5.8.2 Weekly Reports**

- 1.All Electrical Systems Health Check Report
- 2.Vendor call tracking until closure
- 3.UPS and DG: On load Report.
- 4.Fire Alarm System: Reports of False Alarm.

5. Access System: Data Backup.
6. CCTV: Backup of DVR Status.
7. WLD: Test of Water Leak Detection Sensor Cable.
8. All System Health Report.

### **5.8.3 Monthly Reports**

1. Follow up of schedule regarding PMC.
2. Presentation of consumption of meter units by Pie diagram.
3. Vendor Performance Reports.
4. Report of pending calls/problems.
5. MIS Report Presentation for Each Month
6. Monthly PUE sheet

### **5.9 Call Logging Process with OEM/Vendors**

The onsite team will get alerts on any issue in the Data Centre. The onsite team will identify the area of problem and define problem severity into minor or major call. Call severity will be decided on basis of unit under suspect and impact on functions inside Data Centre like - electrical power in DB, racks, cooling efficiency. Based upon this on-site team will either manage to close the problem in case of minor alerts/alarms or in case of major alarms the team will raise an alarm over phone and email to OEM/Vendor with information to IIT Delhi designated team and O&M in-charge. O&M team will follow the Escalation matrix. The OEM will identify problem area and will work towards resolution of problem keeping SLA in consideration. Once the call is completed the Operations team will record this log into the call register and update in daily monitoring report. Depending upon the severity of call and impact of business caused due to the call the Uptime will be calculated. An incident report will be generated by Operations team and will be flashed within 24 hours of the time incident was reported with a preventive and corrective action description. This report will be flashed after Operations in-charge scrutinises the problem and provides concurrence to the Incident report. The action against preventive action will be tracked by Operations in-charge till its closure and approved by IIT Delhi.

### **5.10 Change Management**

Any change in configuration of equipment due to loss of efficiency or isolated frequent failures of units deployed inside Data Centre by O&M team will be the responsibility of Bidder. Even if O&M Team owns the responsibility of such changes in configurations the final decision of any such modification will be jointly discussed and agreed by both IIT Delhi and Bidder before the change is done.

### **5.11 Operation and Management Structure**

- The operations at the Data Centre will be 24 × 7.
- There will be three shifts of operations. The indicative shift timings are

**Shift I:** 0700 - 1530.

**Shift II:** 1500 - 2300.

**Shift III:** 2230 - 0630.

The following manpower should be deployed.

**Site manager:** The Site Manager should have a BE degree in Electronics/IT with 4 to 5 years of experience in Data Centre O&M. The Site Manger should be available from 0900 - 1800 on all days. The site manager should be an employee of the successful bidder.

**BMS operator:** There should be a BMS operator in each shift. The BMS operators should be BE/Diploma holders with 3 to 4 years experience in Data Centre operations.

**Electrician:** There should an Electrician in each shift. The Electricians should be Diploma holders/ITI in Electrical with 3 to 4 years of experience.

**HVAC operator:** There should be a HVAC operator in each shift. The HVAC operators should have a qualification in Mechanical Engineering with 3 to 4 years of experience in O&M of chillers, precision air conditioning etc.

**Helper:** There should be helper (SSC pass) available from 0900-1800.

In addition, there should be relievers for each of the shift operators and the helper. All minimum wages rules and regulations (along with PF and ESI) needs to be considered in case of out-sourced employees. IIT Delhi may ask vendors to submit the wages slips of the employees deputed at site. IIT Delhi may also require PF and ESI details of all outsourced employees.



## 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> The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is stated at page #1 of the tender document within 21 days from the date of receipt of the purchase order and should be kept valid for a period of 60 days beyond the date of completion of warranty period.
9.	<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.

	<ul style="list-style-type: none"> <li>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.</li> <li>If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</li> </ul>
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.	<b>Packing Instructions:</b> Each package will be marked on three sides with proper paint/indelible ink, the following: <ol style="list-style-type: none"> <li>Item Nomenclature</li> <li>Order/Contract No.</li> <li>Supplier's Name and Address</li> <li>Consignee details</li> <li>Packing list reference number</li> </ol>
12.	<b>Delivery and Documents:</b> Delivery of the goods should be made within a maximum of 25 weeks ( <i>for goods ready for shipment</i> ) & Maximum ( <i>To be filled by Purchaser</i> ) weeks ( <i>For special/ to be fabricated goods</i> ) from the date of the 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: <ol style="list-style-type: none"> <li>4 Copies of the Supplier invoice showing contract number, goods' description, quantity</li> <li>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> <li>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.</li> </ol>
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.	<b>Prices:</b> The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges.  Price quoted should be in Indian Rupees, free delivery at IIT Delhi Campus at site (DDP/FOR).  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.  The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However, the percentage of taxes & duties shall be clearly indicated.

	<p><b>Necessary certificate will be issued on demand.</b> 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 -</p> <ul style="list-style-type: none"> <li>(i) All items of the bid which are mandatorily required to meet the tendered specifications of the item/system</li> <li>(ii) 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</li> <li>(iii) 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</li> <li>(iv) Anything asked as 'optional' in our specs is not to be included for overall comparison</li> </ul> <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:</p> <ul style="list-style-type: none"> <li>(i) 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.</li> <li>(ii) 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;</li> <li>(iii) If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.</li> </ul>
15.	<p><b>Notices:</b> For the purpose of all notices, the following shall be the address of the Purchaser and Supplier. <b>Purchaser: Head,</b> <b>Computer Service Centre</b> Indian Institute of Technology Hauz Khas, New Delhi - 110016.</p> <p><b>Supplier:</b> (To be filled in by the supplier) <b>(Supplier should 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:</p> <ol style="list-style-type: none"> <li>1. Quantity offered for inspection and date;</li> <li>2. Quantity accepted/rejected by inspecting agency and date;</li> <li>3. Quantity dispatched/delivered to consignees and date;</li> <li>4. Quantity where incidental services have been satisfactorily completed with date;</li> <li>5. Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date;</li> </ol>

	<p>6. Date of completion of entire Contract including incidental services, if any; and</p> <p>7. 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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• In the event of the ordered item failing to pass the acceptance test, a period not exceeding one weeks will be given to rectify the defects and clear the acceptance test, failing which the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser.</li> <li>• 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.</li> </ul>
18.	<p><b>Resolution of Disputes:</b> The dispute resolution mechanism to be applied pursuant shall be as follows:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>
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>

	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.
24.	<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.
25.	<b>Incidental services:</b> The incidental services also include: <ul style="list-style-type: none"> <li>● Furnishing of 01 set of detailed operations &amp; maintenance manual.</li> <li>● 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.</li> </ul>
26.	<b>Warranty:</b> <p>(i) Warranty period shall be (as stated at page #2 of this tender) from date of installation of Goods at the IITD site of installation. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall at its discretion make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests. The warranty should be comprehensive on site.</p> <p>(ii) The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within in 02 days arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for correction of defects in the warranty period is 02 days. If the supplier having been notified fails to remedy the defects within 02 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract.</p> <p>(iii) The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.</p> <p>(iv) After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) up to next two years should be started. The AMC/CMC charges will not be included in computing the total cost of the equipment.</p>
27.	<b>Governing Language:</b> 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> <ul style="list-style-type: none"> <li>● 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.</li> <li>● A notice shall be effective when delivered or on the notice's effective date, whichever is later.</li> </ul>

30.	<p><b>Taxes:</b> Suppliers shall be entirely responsible for all taxes, duties, license fees, octroy, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, GST etc, in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.</p>
31.	<p><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.</p>
32.	<p><b>Payment:</b> Refer to section 4.18. Any remaining payment shall be made by the Purchaser against successful 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.</p>
33.	<p><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)</p>
34.	<p><b>Manuals and Drawings:</b> (i) Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications. (ii) The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract. (iii) Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.</p>
35.	<p><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)</p>
36.	<p><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.</p>
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: ii. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and iii. In the event of termination of production of the spare parts: iv. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and v. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.</p>

	Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.
38.	<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 & conditions, IIT Delhi may consider "Banning" the supplier.
39.	<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: <ul style="list-style-type: none"> <li>i. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser; or</li> <li>ii If the Supplier fails to perform any other obligation(s) under the Contract.</li> <li>iii If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.</li> </ul> <ul style="list-style-type: none"> <li>● For the purpose of this Clause: <ul style="list-style-type: none"> <li>i. <b>"Corrupt 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.</li> <li>ii. <b>"Fraudulent 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;”</li> </ul> </li> <li>● 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.</li> </ul>
40.	<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.
41.	<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.
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.	<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</i>

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)

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

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

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

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

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

Explanation-

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

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

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



	<p><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>

**ANNEXURE-II****<< 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

**Annexure-III**

**List of Govt. Organization/Deptt.**

<b>List of Government Organizations for whom the Bidder has undertaken such work during last three years (must be supported with work orders)</b>		
<b>Name of the organization</b>	<b>Name of Contact Person</b>	<b>Contact No.</b>

<b>Name of application specialist / Service Engineer who have the technical competency to handle and support the quoted product during the warranty period.</b>		
<b>Name of the organization</b>	<b>Name of Contact Person</b>	<b>Contact No.</b>

**Signature of Bidder**

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Organization Name:** \_\_\_\_\_

**Contact No. :** \_\_\_\_\_

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

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

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

Yours Faithfully,

(Name)

(Name & Seal of Manufactures)

Note: -

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

<On Organization Letter Head>

**(ANNEXURE-VI)**  
(For Goods/ Services Contracts)

No. \_\_\_\_\_  
Dated: \_\_\_\_\_

CERTIFICATE

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

*OR (whichever is applicable)*

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

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

**Signature of Bidder/ Agent**

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Organization Name:** \_\_\_\_\_

**Contact No. :** \_\_\_\_\_

<On Organization Letter Head>

**(ANNEXURE-VII)**

(For Works Contracts, including Turnkey contracts)

No. \_\_\_\_\_  
Dated: \_\_\_\_\_

**CERTIFICATE**

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

*OR (whichever is applicable)*

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

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

**Signature of Bidder/ Agent**

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Organization Name:** \_\_\_\_\_

**Contact No. :** \_\_\_\_\_

(ANNEXURE-VIII)

**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.*



(ANNEXURE-IX)

**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)			
<b>Sl. No.</b>	<b>Document</b>	<b>Content</b>	<b>File Types</b>
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>			
<b>Sl. No.</b>	<b>Document</b>	<b>Content</b>	
1.	Financial Bid	Price bid should be submitted in given BOQ_XXXX.xls format. <i>(Note:- All sheet items must be filled for a valid bid. 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. The 'miscellaneous' sheet can be filled with cost of material/services not considered in the other sheets. The description of the same must be provided in the bid documents)</i>	.XLS