

Indian Institute of Technology, Kanpur
Civil Engineering Department
Request for Proposal

The Director, Indian Institute of Technology Kanpur (IITK) invites proposal in two bid (technical & financial) format from reputed firms as follows: -

Sl.No.	Name of Work	Bid Security (in Rs.)	Last Date and time for Submission of tender	Date and time for opening of Technical Bid
1.	Design, Engineering, manufacture, work testing, supply, transportation to site, off-loading, including all site handling, construction of required foundation, installation, commissioning, site acceptance test and hand over of Oil Free Air Compressor. (Details as per Volume II of Tender Document)	50,000/-	13.09.2017 upto 1700 hrs <i>Revised</i> <i>20.09.2017 upto 1700 hrs</i> <i>Re-Revised</i> <i>29.09.2017 upto 1700 hrs</i>	14.09.2017 at 1500 hrs <i>Revised</i> <i>21.09.2017 upto 1700 hrs</i> <i>Re-Revised</i> <i>03.10.2017 upto 1700 hrs</i>

The firms with at least three years relevant experience in above said work are eligible to participate. The proposal duly completed in all respect should be submitted in sealed cover duly marked, so as to reach undersigned on or before 1700hrs on 13.09.2017 (*revised before 1700hrs on 20.09.2017 and Re-revised up to 29.09.2017*). The tender document with eligibility criteria and other details may be downloaded from www.iitk.ac.in. The Institute reserves the right to accept or reject any offer or all the offers without assigning any reasons thereto.

No. CE/2017-18/0136, dated: 17.08.2017

Dr. SN Tripathi,
Civil Engineering Department,
Indian Institute of Technology Kanpur.
Email: snt@iitk.ac.in
Phone: 0512-259 7845



Volume I (General)

INSTRUCTIONS TO BIDDERS

A : GENERAL

1. Eligibility and Experience of the Bidder:-

Bidder should have capability to provide specialist engineering services to Indian and International Companies.

IITK to evaluate the bidder's capabilities and its decision shall be final.

2.0 Tender Fee

2.1 The bidders shall be able to create the bid only after payment of tender fee. The payment of tender fee through electronic payment gateway can be made using credit cards. In case of any subsequent reversal of credit against credit card payment would lead to rejection of bids submitted by such bidders.

2.2 Refund of tender fee

In the event a particular tender is cancelled by IIT K, total tender fee which is inclusive of taxes will be refunded to the concerned Bidder.

3. Transfer of Bidding Document

The Bidding document is non-transferable.

4. Cost of Bidding

4.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and IITK will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

4.2 It is in the bidder's interest to visit the site and understand the local conditions. IITK shall not be held responsible for any cost implications because of local conditions or for bidder not visiting site.

B: THE BIDDING DOCUMENT

5. Content of Bidding Documents

5.1 The services required, bidding procedures and contract terms are described in the bidding document.



5.2 The bidder is expected to examine all instructions, forms, terms and specifications in the bidding documents. Failure to furnish all information required as per bidding documents will be at the bidder's risk. Tenders not complying with tender conditions and not conforming to tender specifications may result in the rejection of its bid without seeking any clarifications.

C. PREPARATION OF BIDS

6.0 Language and Signing of Bid

6.1 The bid prepared by the bidder and all correspondence and documents relating to the bid exchanged by the Bidder and the IITK shall be written in English language.

6.2 Bidder is advised to note that the prices are to be quoted in the price Bid attached with the Bid. The price quoted anywhere else other than price bid in a separate envelope shall result into disqualification of the bids.

The bid and all attached documents should be signed by the bidder as a token of acceptance. A power of attorney to be submitted that allow the signatory of the bid to submit the bids.

6.3 The bids can only be submitted in the name of the Bidder in whose name the bid documents were issued by IITK. The bid papers, duly filled in and complete in all respects shall be submitted together with requisite information. It shall be complete and free from ambiguity.

6.4 The bidder should indicate at the time of quoting against this tender their full postal/ telegraphic/Email addresses and name of contact persons with their mobile nos.

6.5 The bid including all attached documents shall be signed by duly authorized representative of the bidding company. Power of attorney for the signatory, issued by the bidding company should be submitted along with other documents as per tender conditions in physical form in sealed envelope.

6.6 The bidder shall clearly indicate their legal constitution and the person signing the bid shall state his capacity and also source of his ability to bind the Bidder.

6.7 The power of attorney or authorization, or any other document consisting of adequate proof of the ability of the signatory to bind the bidder, shall be annexed to the bid with unpriced bid folder. IITK may reject outright any bid not supported by adequate proof of the signatory's authority.

6.8 The Bidder, in each tender, will have to give a certificate in its offer, that the terms and conditions, as laid down in this bidding document are acceptable to it in toto.

6.9 Any interlineations, erasures or overwriting shall be valid only if they are initialed by the person or persons signing the bid.

6.10 Joint venture / consortium bids:-

(a) In view of the diversity of nature of work involved as covered by the Bidding Documents, it is anticipated that some of the intending bidders may pool their resources and experiences to form



Consortia/Joint Ventures. In their own interest, the bidders are advised to investigate the capabilities, availability of expertise and resources such as construction equipment, experienced personnel, financial soundness, past experience and concurrent engagements of constituting partners/members of the consortium/joint venture.

- (b) The leader of the Consortium can submit bid on behalf of consortium of bidders. Memorandum of Understanding between the Consortium members duly signed by the Chief Executives of the consortium members must accompany the bid which should clearly define role/scope of work of each partner/member and should clearly define the leader of consortium. *In case of award, such MOU shall be kept valid through the entire contract period, including extensions, if any.* The following provisions should also be incorporated in the MOU executed by the members of the Consortium/Joint Venture:-
- (i) The leader of the consortium/joint venture on behalf of the consortium / joint venture shall coordinate with IITK during the period the bid is under evaluation as well as during the execution of works in the event contract is awarded and he shall also be responsible for resolving dispute/ misunderstanding/undefined activities, if any, amongst all the consortium/ joint venture members.
 - (ii) Any correspondence exchanged with the leader of consortium/joint venture shall be binding on all the consortium/joint venture members.
 - (iii) Payment shall be made by IITK only to the leader of the consortium/joint venture towards fulfillment of contract obligations
- (c) **Constitution of Consortium:** If during evaluation of bid, a consortium leader proposes any alterations/changes in the constitution or replacement or inclusion or expulsion of any partner(s)/ member(s) of the consortium which had originally submitted the bid, to derive some advantages/benefits based on any development(s) having come to his knowledge at any time, the bid of such a consortium shall be liable for rejection unless such a change is agreed to by IITK in writing.
- (d) **Signing of Contract:** In the event of award of contract to the consortium/joint venture, the contract may be signed by the leader.

7.0 Compliance with the Requirements of Bid and All Other Tender Conditions:

IITK has to finalize its purchase within a limited time schedule. Therefore, it may not be feasible for IITK to seek clarifications in respect of incomplete offers.

Prospective bidders are advised to ensure that their bids are complete in all respects and conform to IITK's terms, conditions and bid evaluation criteria of the tender. Bids not complying with IITK's requirement may be rejected without seeking any clarification.

8.0 Documents Comprising the Bid

8.1 The bid prepared by the Bidder shall comprise the following components, duly completed:

- a) Bidder is advised to note that the prices are to be quoted in the price Bid in a standard proforma along with detailed break-up.



- b) Bid Security: EMD of Rs. 50,000 to be submitted along with bid.
- c) Undertaking that the services to be rendered by the Bidder conform to the requirements of bidding documents.
- d) The documentary evidence of conformity of the services to the bidding documents may be in the form of literature, drawings and data.
- e) Bidder to sign Non Disclosure Agreement with IITK . Any technical document, drawings in the form of soft or hard copy shall not be disclosed to anybody out side the working team. All the hard copies shall be destroyed immediately after the use.
- f) The bidder should submit a declaration to the effect that neither the bidder themselves, nor any of its allied concerns, partners or associates or directors or proprietors involved in any capacity, are currently serving any banning orders issued by IITK debarring them from carrying on business dealings with IITK.

9.0 Price Schedule

9.1 Bidder is advised to note that the prices are to be quoted in the price Bid in sealed in a separate envelope, clearly indicating 'PRICE BID'

9.2 Bid Prices

9.2.1 The bidders shall indicate on the appropriate price schedule the net unit prices

9.2.2 Prices quoted by the bidder shall be firm during the bidder's performance of the contract and not subject to variation on any account.

9.2.3 Discount: Bidders are advised not to indicate any separate discount. Discount, if any, should be merged with the quoted prices. Discount of any type, indicated separately, will not be taken into account for evaluation purpose.

9.3 (a) Concessions Permissible Under Statutes

Bidder, while quoting against this tender, must take cognizance of all concessions permissible under the statutes including the benefit under Central Sales Tax Act, 1956, failing which it will have to bear extra cost where Bidder does not avail exemptions/concessional rates of levies like customs duty, excise duty, VAT/sales tax etc. IITK will not take responsibility towards this. However, IITK may provide necessary assistance, wherever possible, in this regard.

Bidders must also consider benefits of CENVAT credit under the CENVAT Credit Rules 2008 as amended from time to time, for excise duty, service tax etc against their Input materials/Services, while quoting the prices. Similarly, the benefits of input VAT credit against their Input materials, under the relevant VAT Act of the State, should also be duly considered by the Bidders while quoting the prices.

Government of India's guidelines on GST shall be complied.

9.3 (b) Undertaking to provide necessary documents, for enabling IITK to avail Input VAT credit and CENVAT credit benefits (wherever applicable),



Further, the Bidders shall undertake to provide all the necessary certificates / documents for enabling IITK to avail Input VAT credit and CENVAT credit benefits (wherever applicable), in respect of the payments of VAT, Excise Duty, Service Tax etc. which are payable against the contract (if awarded). The Contractor should provide tax invoice issued under rule-4A of Service Tax for the Services; and tax invoice issued under Central Excise rule-11 (indicating education cess and Secondary & Higher Education Cess) for Excise Duty and tax invoice under respective State VAT Act for VAT separately for the indigenous goods.

9.4 **Income Tax Liability**

The bidder will have to bear all Income Tax liability both corporate and personal tax.

9.5 **Service Tax Liability**

The bidder will have to pay all Service Tax liability, as applicable. The applicable Service Tax amount shall be paid to the account of Govt of India,

The Bidder should quote the applicable Service Tax, clearly indicating the rate and the amount of Service Tax included in the bid and the description of the respective service (as per Service Tax rules) under which the Service Tax is payable.

In the contracts involving multiple services or involving supply of certain goods or materials (which should be consumable in nature) along with the services, the Bidder should give separate break-up for cost of goods and cost of various services, and accordingly quote Service Tax as applicable for the taxable services. Contracts involving supply of goods / material which are not consumable in nature would be considered as Works Contract and not Service Contract.

In case the Services Tax is not quoted explicitly in the offer by the Bidder, the offer will be considered as inclusive of all liabilities of Service Tax. IITK will not entertain any future claim in respect of Service Tax against such offers.

In case, the quoted information related to various taxes and duties subsequently proves wrong, incorrect or misleading:-

a) IITK will have no liability to reimburse the difference in the duty/tax, if the finally assessed amount is on the higher side.

b) IITK will have the right to recover the difference in case the rate of duty/tax finally assessed is on the lower side.

The Service Provider should have a valid Service Tax registration certificate with the concerned authorities of Service Tax department and a copy of such registration certificate should be submitted along with the offer.



Government of India's guidelines about GST shall be complied by the bidder.

10.0 Bid Currencies

Bidders should quote firm prices in Indian rupee only. Prices quoted in any other currency shall not be considered.

11.0 Mode of Payment

IITK shall make payments only through Electronic Payment mechanism (viz. NEFT/RTGS /ECS). A successful Bidder should invariably provide the following particulars along with their offers:

1. Name & Complete Address of the Supplier / Contractor as per Bank records.
2. Name & Complete Address of the Bank with Branch details.
3. Type of Bank account (Current / Savings/Cash Credit).
4. Bank Account Number (indicate 'Core Bank Account Number', if any).
5. IFSC / NEFT Code (11 digit code) / MICR code, as applicable, along with a cancelled cheque leaf.
6. Permanent Account Number (PAN) under Income Tax Act;
7. TIN/Sales Tax Registration Number (for supply of Goods) and Service Tax Registration Number (for supply of Services), as applicable.
8. e-mail address of the vendor / authorized official (for receiving the updates on status of payments)."
9. For receiving payment through NEFT / RTGS, the bank/branch in which the bidder is having account and intends to have the payment should be either an NEFT enabled bank or SBI branch with core banking facility

12.0 Concessional Rate of Customs Duty/Excise Duty/ Sales Tax/GST

- 12.1 IIT K is partially/fully exempted from payment of customs/excise duty IITK shall provide necessary documents for the same on request.
- 12.2 As the above statutory provisions are frequently reviewed by the Govt., the bidders are advised to check the latest position in their own interest and IITK will not bear any responsibilities for any incorrect assessment of the statutory levies by any bidder.

13.0 Vague and Indefinite Expressions

Bids qualified by vague and indefinite expressions such as "Subject to availability" etc. will not be considered.

14.0 Period of Validity of Bids

- 14.1 The Bid shall be valid for acceptance for the period of 90 Days and shall not be withdrawn on or after the opening of bids till the expiration of the validity period or any extension agreed thereof.



14.2 In exceptional circumstances, prior to expiry of the original bid validity period, the IITK may request the bidder for a specified extension in the period of validity. The requests and the responses shall be made in writing. The Bidder will undertake not to vary/modify the bid during the validity period or any extension agreed thereof. Bidder agreeing to the request for extension of validity of offer shall be required to extend the validity of Bid Security correspondingly.

15.0 Bid Security

15.1 The Bid Security is required to protect the IITK against the risk of Bidder's conduct which would warrant the security's forfeiture.

15.2 The Bid Security shall be acceptable in any of the following forms:

- i) Bank Draft in favor of The Director, IITK valid for 90 days from its date of issue.
- ii) Bank Guarantee in the prescribed format valid for 90 days beyond the date of required validity of offer.

The bidders will give Bank Guarantee from any of the following categories of Banks:

- (a) Any Scheduled Bank incorporated in India, Bank Guarantee issued by foreign branches / foreign offices of such Scheduled Banks be counter guaranteed by the Indian Branch of any Scheduled Bank incorporated in India.

OR

- (b) Any Branch of an International Bank situated in India and registered with Reserve Bank of India as scheduled foreign bank.

OR

- (c) Any foreign Bank which is not a Scheduled Bank in India provided the Bank Guarantee issued by such Bank is counter guaranteed by any Branch situated in India of any Scheduled Bank incorporated in India.

15.3 IITK shall not be liable to pay any bank charges, commission or interest on the amount of Bid Security.

15.4 The Bid Security shall be forfeited by IITK in the following events:

- a) If Bid is withdrawn during the validity period or any extension thereof duly agreed by the Bidder.
- b) If Bid is varied or modified in a manner not acceptable to IITK during the validity period or any extension of the validity duly agreed by the Bidder.
- c) In case at any stage of tendering process, it is established that bidder has submitted forged documents/certificates/information towards fulfillment of any of the tender/contract conditions.



15.5 The Bid Security of unsuccessful Bidders will be returned on finalization of the bid. The Bid Security of successful bidder will be returned on receipt of Security Deposit/Performance Bond (Performance Security).

16.0 Bid Submission

The bid along with all appendices and copies of documents should be submitted to IITK.

All the documents shall be signed by the authorized signatory of the bidder.

1. The power of attorney or authorization, or any other document consisting of adequate proof of the ability of the signatory to bind the bidder, in original.
2. Non Disclosure agreement signed by the same signatory who signs the bid.

If Bidder fails to submit original documents with the same content as in the copies submitted in the un-priced bid folder (through e-bidding portal) and in accordance with the bidding document, irrespective of their status/ranking in tender, the bid will be rejected.

The offers of the bidders indicating/disclosing prices in Technical bid or at any stage before opening of price-bid shall be straightaway rejected.

16.1 As per Government of India's policy registered SME/ MSME are excluded from Bid Security / EMD.

17.0 Deadline for Submission of Bids

17.1 The duly completed bid shall reach to IITK on or before the time permitted for the bidding.

17.2 No bid can be submitted after the submission dead line is reached.

18.0 Late Bids

18.1 Bidders are advised in their own interest to ensure that bid are submitted well before the closing date and time of the bid.

19.0 Modification and Withdrawal of Bids

19.1 No bid may be modified after the dead line for submission of bids.

20.1 The bidding company shall fulfil the following terms and conditions:

- It should be ISO 9001 14000 certified
- Manufacturer or their authorised dealer can participate
- Minimum 10 years of experience in manufacturing, sales and service for the kind of equipment proposed to be supplied



20.2 The bidder shall provide full details of technical specifications of item offered (not limited to MDS) along with product information catalogues showing model, make, type, constructional details, materials etc. to facilitate speedy evaluation of the quotation. Without the detailed information as and when requested the Institute reserves the full right to reject any offers for further evaluation.

21.0 Opening of Bids

21.1 The Technical bid will be opened at **1500 Hrs. (IST)** on the date of opening as indicated in "Invitation for Bid". The Bidder or his authorized representative may be present at the time of opening of bid on the specified date, but an authority must be forwarded to this office along with bid and a copy of this letter must be produced in the office by the person attending the opening of bid. Unless this letter is presented by him, he may not be allowed to attend the opening of bid.

21.2 In case of unscheduled holiday on the closing/opening day of bid, the next working day will be treated as scheduled prescribed day of closing/opening of bid, the time notified remaining the same.

21.3 The opening of price bids of short listed bidders shall be conducted on the day specified for opening of price bids in presence of bidders' representative.

D. EVALUATION OF BIDS

22.0 Evaluation and Comparison of Bids

22.1 Evaluation and comparison of bids will be done by IITK and or its authorised representatives.

22.2 CLARIFICATIONS OF BIDS:

22.2 During evaluation of bids, Purchaser may at its discretion ask the Bidder for clarifications/ confirmations/ deficient documents of its bid. The request for clarification and the response shall be in writing and no change in the price of substance of the bid shall be sought or permitted.

23.0 Unsolicited Post Tender Modifications:

23.1 Unsolicited post-tender modification will lead to straight away rejection of the offer.

23.2 In case certain clarifications are sought by IITK after opening of bid then the reply of the Bidder should be restricted to the clarification sought. Any bidder who modifies his bid (including all modifications which have the effect of altering his offer) after the closing date, without any specific reference by IITK, shall render his bid liable to be ignored and rejected without notice and without reference to the bidder.

24.0 Examination of Bid

24.1 The IITK will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished,



whether the documents have been properly signed and whether the bids are generally in order.

24.2 IITK will determine the conformity of each bid to the bidding documents. Bids falling under the purview of "Rejection Criteria" of the bid Evaluation Criteria of the bidding document will be rejected.

24.3 It is not mandatory on IITK to accept the lowest bidder.

25.0 Specifications:

25.1 The Bidder must note that its Bid will be rejected in case the tender stipulations are not complied with strictly or the services offered do not conform to the required specifications indicated therein. The lowest Bid will be determined from among those Bids which are in full conformity with the required specifications.

26.0 Contacting IITK

No bidder shall contact the IITK on any matter relating to its bid, from the time of the opening of technical bid to the time the contract is awarded.

27.0 Award Criteria

IITK will adopt a two-stage procedure in evaluating the bids: i) technical evaluation and ii) financial evaluation. The weightage of technical evaluation will be 60 % and of financial evaluation will be 40 %. If required, technical evaluation of the bidder's resources would be undertaken by the client by visiting the bidder's premises. Technically qualified bidders will be evaluated for their financial bids. Each bid will be ranked using a combined technical and financial score and the contract will be awarded to the bidder with the highest score.

28.0 IITK's Right to Accept Any Bid and to Reject Any or All Bids.

28.1 IITK reserves the right to reject, accept or prefer any bid and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for IITK's action

29.0 Notification of Award (NOA)

29.1 Prior to the expiration of the period of bid validity, IITK will notify the successful bidder in writing that its bid has been accepted.

29.2 The notification of award will constitute the formation of the contract.

29.3 Upon the successful bidder's furnishing performance security the contract shall be signed between the parties.

30.0 Mobilization Period



The successful bidder shall be required to submit the profile of the concerned personnel to be associated with the work within 15 days from the issue of NOA by IITK and mobilize the concerned personnel for commencement of the work within 05 (five) working days from the date of intimation by IITK.

31.0 Performance Security

- 31.1 Within 30 (thirty) days from the date of issue of LOA/NOA by IITK, the successful Bidder shall furnish the Performance Security in form of Bank guarantee equal to 10% of price bid rates valid a period of completion of work.
- 31.2 Failure of the successful Bidder to comply with the requirement of clause 31.1 above shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.
- 31.3 The Performance Guarantee will be returned within 60 days of completion of contract in all respect/delivery period as per contract / supply order.

32.0 Correspondence

- 32.1 All the correspondence shall be addressed to Prof. S.N. Tripathi, Department of Civil Engineering, IIT-Kanpur, Kanpur 208016, **Email: snt@iitk.ac.in, Phone No. : 0512-2597845**
- 32.2 All correspondence from Bidders/ contractor shall be made to the office of the Purchase Authority from where this tender has emanated.
- 32.3 All correspondence shall bear reference to bid number.

33.0 Unsolicited Communications

In case any bidder makes any unsolicited communication in any manner, after bids have been opened, the bid submitted by the particular bidder shall be summarily rejected, irrespective of the circumstances for such unsolicited communication.

34.0 Submission of forged documents:

Bidders should note that IITK may verify authenticity of all the documents/certificate/information submitted by the bidder(s) against the tender. In case at any stage of tendering process or Contract/PO execution etc., if it is established that bidder has submitted forged documents/certificates/information towards fulfillment of any of the tender/contract conditions, IITK shall immediately reject the bid of such bidder(s) or cancel/terminate the contract and forfeit EMD/SD submitted by the bidder.

The bidder shall be required to give an undertaking on the company's letter head and duly signed by the signatory of the bid, that all the documents/certificates/information submitted by them against the tender are genuine. In case any of the documents/certificates/information submitted by the bidder is found to be false or forged, action as deemed fit may be initiated by IITK at its sole discretion.

BIDDING DOCUMENT ACKNOWLEDGEMENT PROFORMA

Dated:

Prof. S.N.Tripathi,
Civil Engg. Dept.,
IIT Kanpur,
Kanpur – 208016

Dear Sirs,

We hereby acknowledge receipt of a complete set of Bidding Documents consisting of Annexure (along with their Appendices) enclosed to the "Invitation for Bid" pertaining to providing of Engineering Procurement Construction Commissioning for National Aerosol Facility against Tender NO. **CE/2017-18/0136**.

We have noted that the closing date for receipt of the tender by IITK is **September 29, 2017 at 1700 hrs. (IST)** and opening **October 03, 2017 at 1500 hrs. (IST)**.

We guarantee that the contents of the above said Bidding Documents will be kept confidential within our organization and text of the said documents shall remain the property of IITK and that the said documents are to be used only for the purpose intended by IITK.

Our address for further correspondence on this tender will be as under :

.....
.....

Email ID :

TELEPHONE NO ;

Name & Designation:

Authorized Signatory

Seal of Company:

BID SUBMISSION PROFORMA

Tender No:

Contractor's Address:

Prof. S.N.Tripathi,
Civil Engg. Dept.,
IIT Kanpur,
Kanpur – 208016

Dear Sirs,

1. I/We hereby offer to supply the services detailed in schedule hereto or such portion thereof as you specify in the Acceptance of Tender at the price given in the said schedule and agree to hold this offer open till _____ 90 Days from the date of submission_____.

2. I/We have understood and complied with the "Instructions to Bidders" and accepted the "General Terms and Conditions" for providing goods and services and have thoroughly examined and complied with the specifications, drawings, Special Conditions of Contract and am/are fully aware of the nature of the service required and my/our offer is to provide services strictly in accordance with the requirements.

.....

.....

Email ID:

TELEPHONE NO;

Name & Designation:

Seal of Company:

Authorized Signatory

BID SUBMISSION AGREEMENT PROFORMA

No.

Dated:

To,

Prof. S.N.Tripathi,
Civil Engg. Dept.,
IIT Kanpur,
Kanpur – 208016

Sub: PURCHASE OF BIDDING DOCUMENTS

Ref: Tender No. : CE/2017-18/0136

IITK and the Bidder agree that the Notice Inviting Tenders (NIT) is an offer made on the condition that the Bid would be kept open in its original form without variation or modification for a period of _____ (state the number of days from the last date for the receipt of tenders stated in the NIT) days AND THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT. They further agree that the contract consisting of the above conditions of NIT as the offer and the submission of Bid as the Acceptance shall be separate and distinct from the contract which will come into existence when bid is finally accepted by IITK. The consideration for this separate initial contract preceding the main contract is that IITK is not agreeable to sell the NIT to the Bidder and to consider the bid to be made except on the condition that the bid shall be kept open for _____ (so many) days after the last date fixed for the receipt of the bids and the Bidder desires to make a bid on this condition and after entering into this separate initial contract with IITK. IITK promises to consider the bid on this condition and the Bidder agrees to keep the bid open for the required period. These reciprocal promises form the consideration for this separate initial contract between the parties.

If Bidder fails to honour the above terms and conditions, IITK shall have unqualified, absolute and unfettered right to encash/forfeit the bid security submitted in this behalf.

Name & Designation:

Seal of Company:

Authorized Signatory

Proforma of Bank Guarantee towards Bid Security

Ref. No.....

Bank Guarantee No.....

Dated.....

To,

Prof. S.N.Tripathi,
Civil Engg. Dept.,
IIT Kanpur,
Kanpur – 208016

Dear Sirs,

1. IIT Kanpur has floated a Tender No. **CE/2017-18/0136** and M/s _____ having Head/Registered office at _____ (hereinafter called the 'Bidder' which expression shall unless repugnant to the context or meaning thereof mean and include all its successors, administrators, executors and permitted assignees) have submitted a bid Reference No..... (ENTER HERE BID REFERENCE NUMBER OF THE BIDDER AND NOT TENDER NUMBER) and Bidder having agreed to furnish as a condition precedent for participation in the said tender an unconditional and irrevocable Bank Guarantee of Indian Rupees (in figures)_____ (Indian Rupees (in words)_____ only) for the due performance of Bidder's obligations as contained in the terms of the Notice Inviting Tender (NIT) and other terms and conditions contained in the Bidding documents supplied by IITK which amount is liable to be forfeited on the happening of any contingencies mentioned in said documents.

2. We (name of the bank)_____ registered under the laws of _____ having head/registered office at _____ (hereinafter referred to as "the Bank" which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and permitted assignees) guarantee and undertake to pay immediately on first demand by IITK, the amount of Indian Rs. (in figures) _____ (Indian Rupees (in words) _____ only) in aggregate at any time without any demur and recourse, and without IITK having to substantiate the demand.

Any such demand made by IITK shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the Bidder.

3. The Bank confirms that this guarantee has been issued with observance of appropriate laws of the country of issue.

4. The Bank also agrees that this guarantee shall be irrevocable and governed and construed in accordance with Indian Laws and subject to exclusive jurisdiction of Indian Courts of the place from where tenders have been invited.

5. This guarantee shall be irrevocable and shall remain in force upto _____ which includes thirty days after the period of bid validity and any demand in respect thereof should reach the Bank not later than the aforesaid date.

6. Notwithstanding anything contained hereinabove, our liability under this Guarantee is limited to Indian Rs (in figures) _____ (Indian Rupees (in words) _____ only) and our guarantee shall remain in force until (indicate the date of expiry of bank guarantee) _____.

Any claim under this Guarantee must be received by us before the expiry of this Bank Guarantee. If no such claim has been received by us by the said date, the rights of IITK under this Guarantee will cease. However, if such a claim has been received by us by the said date, all the rights of IITK under this Guarantee shall be valid and shall not cease until we have satisfied that claim. In witness whereof, the Bank, through its authorized officer, has set its hand and stamp on this Day of..... At.....

(Signature)

Full name, designation and
official address (in legible letters) with Bank stamp.

WITNESS NO. 1

Attorney as per Power of

Signature
Full name and official address (in legible letters)

Attorney No.....

Dated

WITNESS NO. 2

(Signature)
Full name and official address (in legible letters)

INSTRUCTIONS FOR FURNISHING BANK GUARANTEE TOWARDS BID SECURITY

1. The Bank Guarantee by Indian Bidders will be given on non- judicial stamp paper/franking receipt as per stamp duty applicable at the place where the tender has emanated. The non-judicial stamp paper/franking receipt should be either in name of the issuing Bank or the bidder.
2. The expiry date as mentioned in clause 5 & 6 should be arrived at by adding 30 days to the date of expiry of the bid validity unless otherwise specified in the bidding documents.
3. The bidders will give Bank Guarantee from any of the Scheduled Bank incorporated in India

PROFORMA FOR UNDERTAKING

The bidder shall give the following undertakings :

We hereby undertake that all instructions and conditions of this tender are acceptable to us unconditionally.

We confirm our prices are firm during the entire duration of the contract .

We confirm to the mobilization all our resources from the date of acceptance of LOI .

We confirm acceptance of Duration of the contract period clause indicated in the bid.

We confirm that our bid includes all Taxes, duties, levies cess etc.

We confirm that our Bid is complete covering all the Scope of Work.

We hereby undertake to provide all the necessary certificates/ documents for enabling IITK to avail Input VAT credit and CENVAT credit benefits (wherever applicable), in respect of the payments of VAT, Excise Duty, Service Tax etc. which are payable against the contract (if awarded), along with documentary evidence for payment of Excise Duty and Service Tax.

We confirm that Government of India's rules and regulations about GST shall be applicable.

We hereby undertake that none of our allied concerns, partners or associates or directors or proprietors involved in any capacity , are currently serving any banning order.

Signature & Seal of Bidder

VOL - II

TECHNICAL SPECIFICATION FOR AIR COMPRESSOR

NATIONAL AEROSOL FACILITY



INDIAN INSTITUTE OF TECHNOLOGY KANPUR



NATIONAL AEROSOL FACILITY

TECHNICAL SPECIFICATION FOR COMPRESSORS

FOREWORD

This outline specification is intended to cover Dry type reciprocating air compressor for meeting compressed air requirement for experimental purpose and instrument operating purpose.

The generic requirements are included in Sections 3 to 6 of this document.

This specifications shall be read in conjunction with Data Sheet.

Data sheets are included for the provision of information by the package supplier. The completed sheets should be returned with the tender, so that the data may be checked for compliance and bid comparison.

The package shall be built in modules so that the installation time at site will be minimised to the highest extent.

Vendor to filled in Data Sheet and signed on all the pages of the specification as a acceptance. Any deviation shall be submitted separately along with the offer. It is vendor's responsibility to bring out any data inconsistency and deviations to the notice of the tendered.



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TECHNICAL SPECIFICATION FOR COMPRESSORS

1.0 SCOPE

1.1 INTRODUCTION

This specification covers the design, engineering, manufacture, works testing, supply, transportation to site, off-loading, including all site handling, construction of required foundation, installation, commissioning, site acceptance test and hand-over of Oil Free Air Compressor.

The scope of equipment and services required by compressor's vendor shall be as described in subsequent clauses of the specification. Any additional items, not specifically mentioned, but required for the safe and efficient operation, are deemed to be inclusive, should they lie within the defined termination points of the vendor's contract.

1.2 COMPRESSOR RATING and OPERATION

Compressor data sheet shall state the required capacity for the given air pressure and flow conditions. The compressor is expected to be operated continuously for approximately 4-5 hours at the rated conditions.

1.3 EXTENT OF SUPPLY (INCLUDE IN TENDERED PRICE)

Compressor package consisting of all auxiliaries, including but not limited to the following:

- i. Suction filter.
- ii. Electrical motor and compressor capacity control device.
- iii. V-belt drive consisting of compressor pulley, motor pulley and set of V-belts and belt guard.
- iv. Inter-stage coolers and after cooler with moisture separator and automatic drain traps (as applicable).
- v. Pressure Relief Valve at outlet of intercooler.
- vi. Forced feed Lubrication system along with first fill of lubricant.
- vii. Oil cooler and oil filter.
- viii. Silencer(s), as applicable.
- ix. Expansion joint and check valve at the discharge.
- x. All piping and pipe supports within the skid/container with connections within the battery limits of skid.
- xi. Instrumentation and controls as specified.
- xii. Instrument gauge panel and local control panel.
- xiii. Cabling/tubing from control panel /gauge panel to individual instruments within battery limit.
- xiv. Local push button stations for drivers.
- xv. Acoustic hood (as applicable).
- xvi. Common base frame for the complete assembly unit.
- xvii. Foundation with foundation bolts.
- xviii. Painting.
- xix. Inspection and testing as detailed in this specification.



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TECHNICAL SPECIFICATION FOR COMPRESSORS

- xx. Supervision of erection and commissioning.
- xxi. List of spares for 2 years normal continuous operation.
- xxii. Start-up and commissioning spares.
- xxiii. Special tools and tackles required for erection/commissioning.
- xxiv. Documentation as specified.
- xxv. Ref/heating dryer.

1.4 TERMINATION POINTS

- i) Process Plant Air – outlet : Discharge of Air compressor package.
- ii) Instrument Air – outlet : Discharge of Air compressor package.
- iii) Cooling water (as applicable) : At one point supply and return on the skid.
- iv) Electric Supply : Power at main isolator of control panel of the compressor.
- v) Control signals : One communication serial port at panel.

2.0 STANDARD SPECIFICATIONS

Compressor shall comply with all currently applicable statutes, regulations and safety codes. Nothing in this specification shall be construed to relieve the vendor of his responsibility. Any changes, if required, to meet the statutory norms shall be carried out by the vendor at no extra cost.

International bidders may follow equivalent local codes as per their manufacturing standards and shall highlight the same in their offers.

The equipment shall conform to the following codes and standards:

ISO 1217-1996, Annex-C Positive Displacement compressors -- Acceptance tests

ASME PTC 9 - 1974	Performance Test for Positive Displacement Compressors, Vacuum Pumps and Blowers
ASME B 16.5	Steel pipe flanges and flanged fittings.
ASME B 31.3	Process Piping
ASME Sec VIII Div1 - 2001	Unfired Pressure Vessel code
TEMA-C - 1999	Shell and tube type heat exchanger
API-RP-520 PART I/II	Pressure relieving systems
IEC 60034	Motors
IEC 60204-1	Safety of machinery Electrical equipment of machines.
IEC 60364	Requirements for fixed electrical installations
IEC 61439-1:2009	Low voltage switch gear and control gear assemblies
ISA	International society for Automation



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TECHNICAL SPECIFICATION FOR COMPRESSORS

In case of conflict between any of the codes/ standards mentioned above, the following order of precedence shall govern:

- i) Local regulations
- ii) Equipment data sheets
- iii) This specification
- iv) Other specifications
- v) Codes and standards

3.0 BASIC DESIGN

3.1 TECHNICAL REQUIREMENT

- 3.1.1 Unless otherwise specified, compressor shall be stationary, reciprocating, non-lubricated, electric motor driven, heavy duty and water-cooled type.
- 3.1.2 Any part weighing above 50 kg, required to be removed for maintenance purpose, shall be provided with cast or provision of slinging may be provided with welded on lifting lugs.
- 3.1.3 Vendor shall ensure that the installation is free from harmful vibrations under any of the possible operating conditions including starting, stopping, steady running, operating transients or when tripped.
- 3.1.4 Major parts on the cylinder and compressor shall be designed with positioning dowels to ensure accurate alignment after reassembly. Drainage points shall be provided at all low points in the compressor, piping and other equipment. These shall be individually terminated with valves.
- 3.1.5 Distance piece for non-lubricated compressor shall be long enough to prevent any part of piston rod from entering both cylinder and crankcase. It means that portion of piston rod in contact with oil deflector baffle should not enter in the cylinder packing area.
- 3.1.6 Piston rod shall be surface hardened where contact is made with gland packing. Liners shall be provided in compressor cylinder.
- 3.1.7 Crankshaft shall be properly balanced and provided with antifriction bearings so that no thrust shall be transferred to drive train. The L10 life of anti-friction bearings shall be of minimum of 50,000 hours with continuous operation at rated condition.
- 3.1.8 Crankcase shall be provided with oil seals/labyrinths to avoid any inside contamination by foreign particles and dust etc. A bull-eye sight glass shall be provided on housing to monitor the oil level.
- 3.1.9 Forced feed lubrications system shall include one shaft driven oil pump complete with strainers, relief valves and oil cooler to maintain oil temperature below 70°C.
- 3.1.10 Accessories:
 - A suction filter cum silencer for each compressor shall be provided to have cleaner air at compressor inlet flange. It shall be suitable to be mounted outdoor with hood and bird screen arrangement.



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TECHNICAL SPECIFICATION FOR COMPRESSORS

Filtered air to 20 micron particle size will be made available in compressor room. Compressor shall be provided with a dry-type suction filter with filtration efficiency 97% down to 3 μm particle size. Filter shall be provided with a differential pressure transmitter.

- Inter-cooler(s) and after-cooler shall be provided for each compressor. These shall be shell and tube; air on shell side and water through tubes. U-tubes shall not be used. Tubes shall be fusion welded to tube sheet and it shall be possible to remove the tube bundle without dismantling the piping connections. It shall have corrosion allowance of 3.0 mm. These shall be provided with vent, drain valves and relief valves.
- A moisture separator with auto drain trap shall be provided at each exchanger.
- A non-return valve shall be provided at discharge of each compressor

3.1.11 The inter-stage and delivery relief valves set pressure shall be minimum 110% of the maximum delivery pressure but less than maximum operating pressure. Valves shall be full-bore type, sized for full flow

3.1.12 Motor shall be rated for power required at relief valve set pressure or 125% of absorbed power at rated duty condition, whichever is higher.

3.1.13 Water piping will be terminated at single points (both supply and return). The same shall be terminated with flanges and isolation valves. Valves for regulation shall be in return cooling water lines.

3.1.14 Flanges at battery limit shall be as per ANSI B16.5.

3.1.15 All moving parts shall be guarded for personnel protection.

3.1.16 Service factor for V-belt drive shall be 2.0 on motor HP.

3.1.17 Compressor shall be manually unloaded for start-up.

4.0 OTHER REQUIREMENTS

4.1 CONTROLS AND INSTRUMENTATION:

All necessary instrumentation shall be provided to ensure efficient and safe functioning of the package. However, following are the minimum requirements:

- Pressure transmitter, pressure gauge with isolation valve for discharge pressure inter-stage pressure (if applicable) and lube oil pressure.
- Temperature indication for discharge air temperature and lube oil temperature.
- Pressure safety valve at discharge air.

Provision for the following safety interlock with audio/visual alarm shall be made:

- High Discharge Air Temperature (each stage) - Alarm / Trip
- High Discharge Air Pressure (each stage) - Alarm / Trip



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TECHNICAL SPECIFICATION FOR COMPRESSORS

- | | |
|--|----------------|
| - Motor overload | - Trip |
| - Low lube oil pressure | - Alarm / Trip |
| - High lube oil temperature | - Alarm / Trip |
| - Low cooling water pressure | Alarm / Trip |
| - High liquid level in separator | - Alarm / Trip |
| - High Pressure drop across air filter | - Alarm |
| - High Pressure drop across air dryer | - Alarm |
| - Low Pressure at compressor outlet | - Alarm |

First-out type annunciation windows shall be provided.

Alarm settings shall always precede the shutdown function. Each alarm and shutdown instrument shall be provided in separate housing. A potential free contact shall be provided for common fault annunciation in Purchaser's main control panel.

Alarm /Trip conditions shall be displayed on the PLC (to be supplied by Purchaser). Vendor shall provide junction boxes to allow the Purchaser to connect cabling up to PLC.

Air Compressor vendor shall provide a detailed write-up on control logic scheme offered.

Indications for power supply ON/OFF, unit ON/OFF, compressor status load / unload shall be provided. Local start/stop controls shall be provided.

The following control and monitoring systems shall be provided –

Compressor Control to PLC:

- Air Flow rate (SLPM or kg/hr).
- Delivery pressure and temperature
- ON/OFF status
- Compressor failure or trip indication

PLC to Compressor Control:

- ON/OFF command
- Emergency stop
- Flow rate as input (SLPM or kg/hr)
- Operating/Delivery pressure as input



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The control system should be able to communicate over Ethernet / MOD bus TCP/IP with the main automation system for the plant.

The automation system should also have sufficient no. of hard-wired I/O's for information exchange with the central plant control system. This will be over and above the 10% spare I/O's that has to be supplied along with the system.

4.2 Electrical

The power supply to the skid motor starter panel shall be 3 phase and neutral, 50Hz. Supply voltage shall be 415V as specified on the purchase order. On-skid, all requisite power, control and earth cabling, glands, lugs, etc. shall be included to interconnect the motor starters, motors, remote control units, anti-condensation heater switches, etc. such that only the two main feeder cables and two main earth cables to the skid earth bosses are required to be provided by COMPANY. On-skid cabling shall be run neatly on galvanized, earthed cable tray and be secured at regular frequent intervals.

Four pole isolating switches/circuit breakers shall have 'running', (red), 'stopped' (green) and 'tripped' (amber). Each starter contactor shall be provided with 1 n/o and 1 n/c voltage free contacts for remote motor running/stopped indication.

Motors shall be TEFC type, suitable for prevailing ambient conditions, have a minimum degree of protection of IP55 to IEC 529. Motors shall be direct-on-line starting.

The instrument air skid shall be provided with two earthing bosses (M10 studs) at opposite ends of the skid. All on-skid equipment shall be effectively earthed, including motors and remote control units. Minimum size of on-skid earthing conductor shall be 25 mm².

4.3 PIPING

The compressed air piping within the skid shall be of suitable material and thickness as per acceptable standards and process requirements.

4.4 WELDING

The welding procedure specification and procedure qualification records shall be made available to the Purchaser for review and approval on request.

4.5 PAINTING

Painting and protective coatings, including surface preparation and coating or paint application shall be applied to all equipment, structural steel, base plate etc. All grit blasting required for surface preparation shall be accomplished prior to instruments and controls being mounted on the skid. Paint systems may be CONTRACTOR's standard, provided this is suitable for the environmental conditions specified.



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5.0 SPARE PARTS

A list of recommended spare parts with pricing for commissioning and two years operation shall be submitted by the vendor. Based on this list, the Client will advise which spare parts shall be supplied.

6.0 INSPECTION AND TESTING

The vendor shall furnish stage-wise QA/QC plan for the equipment offered by him. This plan, after approval by Purchaser, shall form the basis of inspection.

Dynamic balancing test shall be witnessed by the Purchaser's / Engineer's representatives.

Purchaser or his representative shall have an access to vendor's quality control plan for review and approval. Purchaser reserves the right to visit vendor's shop for inspection at any stage of manufacturing.

All instrumentation, protection and control devices shall be fully loop checked and functionally tested prior to the unit run test.

All panel components shall be operating and the unit shall be started through the panel board. No lockout or shutdown signals shall be bypassed during start-up and the run test.

The unit shall be run at full load for a minimum of one (1) hour, during which the various LEAD/LAG/MANUAL modes shall be verified.

Performance tests shall be carried out as per applicable portion of ASME PTC 9 or as per ISO 1217, 1986 for Air compressor, for following parameters-

- Discharge pressure
- FAD (without negative tolerance)
- Specific power consumption (without any positive tolerance) for maximum capacity
- Discharge temperature at minimum capacity.
- Air quality test

In addition, the following tests shall also be performed and witnessed:

- Mechanical run test
- Non-destructive test of main parts.
- Hydraulic test

A witnessed functional test shall be performed at in the vendor's facility to verify cycle times, instrumentation and controls.

7.0 DOCUMENTATION, DRAWINGS, CERTIFICATES

The vendor shall include as a minimum the following documentation:



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TECHNICAL SPECIFICATION FOR COMPRESSORS

- Equipment Specification Data Sheets
- An Installation, erection, and commissioning manual.
- Plan, layout, and Installation (general arrangement) drawing.
- Control system specifications and control circuit drawing.
- Process and Instrumentation Diagram (PID).
- Operation and maintenance manuals including full details of all equipment with complete parts lists.
- Instrument Index/Schedule
- Electrical Schematics and Wiring Diagrams
- Electrical Earthing Plan
- Instrument Alarm and Shutdown Settings
- Test and Inspection Plan
- Full package CE certificates, copies of all materials and test certificates for pressure part.

8.0 GUARANTEES

8.1 Mechanical, Electrical, Instrumentation, etc.

Vendor shall guarantee against defective materials and workmanship for a period of three years from the date of commissioning and handover of the equipment/facility/service.

8.2 Performance

The equipment shall be guaranteed for satisfactory performance at all operating conditions on the data sheet and performance curve. Field checks on performance, when made by the Purchaser, shall be made within the agreed time of initial operation.

Following parameters shall be guaranteed by the vendor for compressor:

- FAD (without any negative tolerance)
- Discharge pressure
- Power consumption (without any negative tolerance)
- Capacity control
- Discharge temperature
- Vibrations
- Noise levels
- Cooling water consumption (as applicable)
- Oil content in Compressed Air.
- Moisture content in Compressed Air

9.0 RELATED DOCUMENTS

- Data sheet for reciprocating air compressor
- Equipment layout document for preparation of General Arrangement Drawing.

10. Deviations:



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Vendor to report if any deviations are taken to the specifications and data sheet. It is vendor's responsibility to check data consistency and report any deviations. Specifications are the bare minimum requirement and it does not absolve vendor's responsibility to provide complete reliable system.



**MECHANICAL DATASHEET FOR
AIR COMPRESSOR
(DRY RECIPROCATING)**

PROJECT

NAF

PAGE NO.

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**INDIAN INSTITUTE OF TECHNOLOGY KANPUR
NATIONAL AEROSOL FACILITY**

MECHANICAL DATASHEET FOR AIR COMPRESSOR (DRY RECIPROCATING)



DATA SHEET

AIR COMPRESSOR

Page No.

02 of 05

Core Design		COMPRESSED AIR SYSTEM			Item No.	C-201	
Equipment		RECIPROCATING AIR COMPRESSOR			No. in Service	No. Total	
1	Applicable Standards						
2	Manufacturer	*			Model & Type	*	
3	Driver	Electric Motor					
4							
5	OPERATING CONDITIONS						
6	Gas Handled	Air					
7	Mass Flow Required	kg/h	400				
8	Area classification	Safe					
9	Service	(Process / Instrument)			Both		
10	INLET CONDITIONS						
11	MSL	mtrs	118				
12	Temperature throughout year	°C	Minimum	5			
			Maximum	45			
			Average	22			
13	Relative Humidity	%	10-94				
14	Molecular Weight	kg/ mol	28.96				
15	Ratio of Specific Heats (Cp/Cv)	K1	1.4				
16	Compressibility Factor	z1	0.99				
17	Inlet Volume	Am ³ /h	*				
18	DISCHARGE CONDITIONS						
19	Pressure	bar(g)	5.5				
20	Temperature	°C	<40				
21	Ratio of Specific Heats (Cp/Cv)	K2	1.4				
22	Compressibility Factor	z2	1				
23	Max allowable discharge temperature	°C	40	(At the battery limit)			
24	Relief valve set pressure	bar(g)	6.05				
25	Max. power at relief valve set pressure	kW	*				
26	Recommended driver power	kW	*				
27	Guarantee case						
28	Total shaft power	kW	*				
29	Rated power	kW	*				
30	Air Quality	100 % Oil Free / 99 % Dry					
31	Capacity	Kg/hr	MAX/MIN	400 / 5			
32	Turn Down Ratio	*					



DATA SHEET

AIR COMPRESSOR

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Core Design **COMPRESSED AIR SYSTEM**

Item No. **C-201**

Equipment **RECIPROCATING AIR COMPRESSOR**

No. in Service

No. Total

1	Compressor & Drive				Main casing connections			
2	Compressor type / arrangement		Reciprocating / Horizontal		Connection identifier		Suction	Discharge
3	Direction of rotation (facing driven end)		*		Size (NB)		*	*
4	Estimated nominal power		kW	*	Flange rating/ facing/finish		*	*
5	Maximum allowable speed		rpm	*	orientation, facing driven end		*	*
6	Calculated Gas Rod Load		rpm	*	C W connection in, number		*	*
7	Combined Rod Load (Gas & Inertia)			*	C W connection in, size (NB)		*	*
8	Stroke length			*	C W connection in, type		*	*
9	Cylinder bore		mm	*	C W connection out, number		*	*
10	Piston displacement		m ³ /h	*	C W connection out, size (NB)		*	*
11	Crank angle		°	*	C W connection out, type		*	*
12	Piston/plunger speed (average)		m/s	*				
13	Motor make			*				
14	Motor kW / RPM			*				
15	Type of cooling		Air/Water	*				
16	Cylinder data at rated conditions							
17	Stage no.			*			*	
18	Inlet pressure at cylinder flange		bar(g)		atm		7	
19	Cylinders per stage		qty	*				
20	single or double acting				Double			
21	Cylinder bore		mm	*			*	
22	Cylinder liners			*				
23	Liner nominal thickness		mm	*				
24	Cylinder design clearance		%	*				
25	Volumetric efficiency		%	*				
26	Valves inlet				1"			
27	Valves discharge				2.5"			
28	Type of valves				*		*	
29	Make of valves				*		*	
30	Valve lift inlet		mm	*			*	
31	Valve lift discharge		mm	*			*	
32	Valve velocity		m/s	*			*	
33	Rod diameter		mm	*			*	
34	Reciprocating weight		kg	*			*	
35	Max. allow. working pressure		bar(g)		5.5		*	
36	Max. allow. working temperature		°C		40		*	
37	Hydrostatic test pressure		bar(g)		7		*	
38	Average gas velocity		m/s	*			*	
39	Lubrication system (NA, DRY TYPE)							
40	Type of lubrication of motion work			NA	Steam coil		*	
41	Main oil pump driven by			*	Electric heater with thermostat		*	
42	Aux oil pump driven by elec. motor			*	Type bearings		*	
43	Hand operated pump starting			*	Bearing material		*	
44	System oil capacity			*	Outboard bearing		*	
45	Type of oil			*	Outboard bearing type		*	
46	Oil grade			*				
47	Double oil filter			*				
48	Filtration			*				
49	Cartridge type, stainless steel			*				
Note:- Vendors have to guaranty about air quality, air should be 100% oil free.								



DATA SHEET

AIR COMPRESSOR

Page No.

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Core Design

COMPRESSED AIR SYSTEM

Item No.

C-201

Equipment

RECIPROCATING AIR COMPRESSOR

No. in Service

No. Total

Cooling water system (WATER COOLED / AIR COOLED)

1			
2	Cooling medium	Water	
3	Closed cooling water system		*
4	Compressors cylinders cooling		*
5	Lube oil system compressor cooling		*
6	Compressor intercooler/aftercooler		*
7	Cooling water pump		*
8	Cooling water pump make		*
9	Cooling water pump type		*
10	Cooling water flow required	m ³ /h	*
11	cooling water pump power	kW	*
12			

Pressure vessels

		Inlet	Discharge	Air Dryer	
14					
15	Design code for all pressure vessels	ASME SEC.VIII DIV.1	ASME SEC.VIII DIV.1	Design air flow rate	*
16	Pulsation bottles volume stage 1 (m ³)	*	*	Required air supply pressure	*
17	Pulsation bottles peak to peak level	*	*	Air dew point at oprating pressure	*
18	Pulsation bottles design pressure bar(g)	*	*	Max. Air temperature	40 deg C
19	Separators supplied for	*	*	Minimum retained particle size	0.3 microns
20	Internals for scrubber	*	*	Removal efficiency	99.9
21	Internals for separators	*	*		
22	Design pressure of scrubbers and separator	*	*		

Material of Construction

24				
25	Cylinders	*	Crankshaft	Iron
26	Lliner	*	Connecting rod	Forged Alloy steels
27	Piston	Aluminum alloy	Pulsation dampeners	*
28	Piston ring	Aluminum alloy	Volume bottles	*
29	Piston wear band	*	Inter cooler shell side	*
30	Piston rod	*	Inter cooler tube side	*
31	Piston rod seal assembly	*	After cooler shell side	*
32	Piston rod hardness	*	After cooler tube side	*
33	Valve seats	*	Lube oil cooler shell side	*
34	Valve plates	*	Lube oil cooler tube side	*
35	Valve springs	*	Liquid separators	*
36	Crosshead	*	Internals of separators	*
37	Compressor Pressure packing	*	Intermediate Partition Packing	*
38	Oil wiper packing	*		
39				

Utility requirements

40			
41	Cooling water source		
42	Cooling water temperature; inlet maximum	°C	AMB
43	Cooling water temperature; outlet maximum	°C	40
44	Cooling water temperature; design	°C	50
45	Cooling water pressure; normal	bar(g)	*
46	Cooling water pressure; outlet minimum	bar(g)	*
47	Cooling water pressure; design	bar(g)	*
48	Cooling water quantity	m ³ /hr	*
49	Cooling water fouling coefficient	kcal/m ² .h.°C	*



DATA SHEET

COMPRESSOR

Page No.

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Core Design **COMPRESSED AIR SYSTEM**

Item No. **C-201**

Equipment **RECIPROCATING AIR COMPRESSOR**

No. in Service

No. Total

1	List of Instruments	Safety Interlocks		
2	Pressure Transmitter for Interstage & Discharge	Hi-Interstg. Temp.	- Alarm/Trip	*
3	Lube oil Pressure Transmitter	Hi-Disch. Temp.	- Alarm/Trip	*
4	Pressure Safety valve at each stage discharge	Hi- Lub Oil temp	- Alarm/Trip	*
5	Differential pressure transmitter across oil filter	Lo- Lub oil Press	- Alarm/Trip	*
6	Temp Transmitter at Discharge of each stage	Hi-Liquid Level in Separator	- Alarm/Trip	*
7	Temp Transmitter at outlet of Cylinder cooling water	Motor Overload	- Trip	*
8	Low Pressure at compressor outlet		Alarm	Required

Inspection and testing

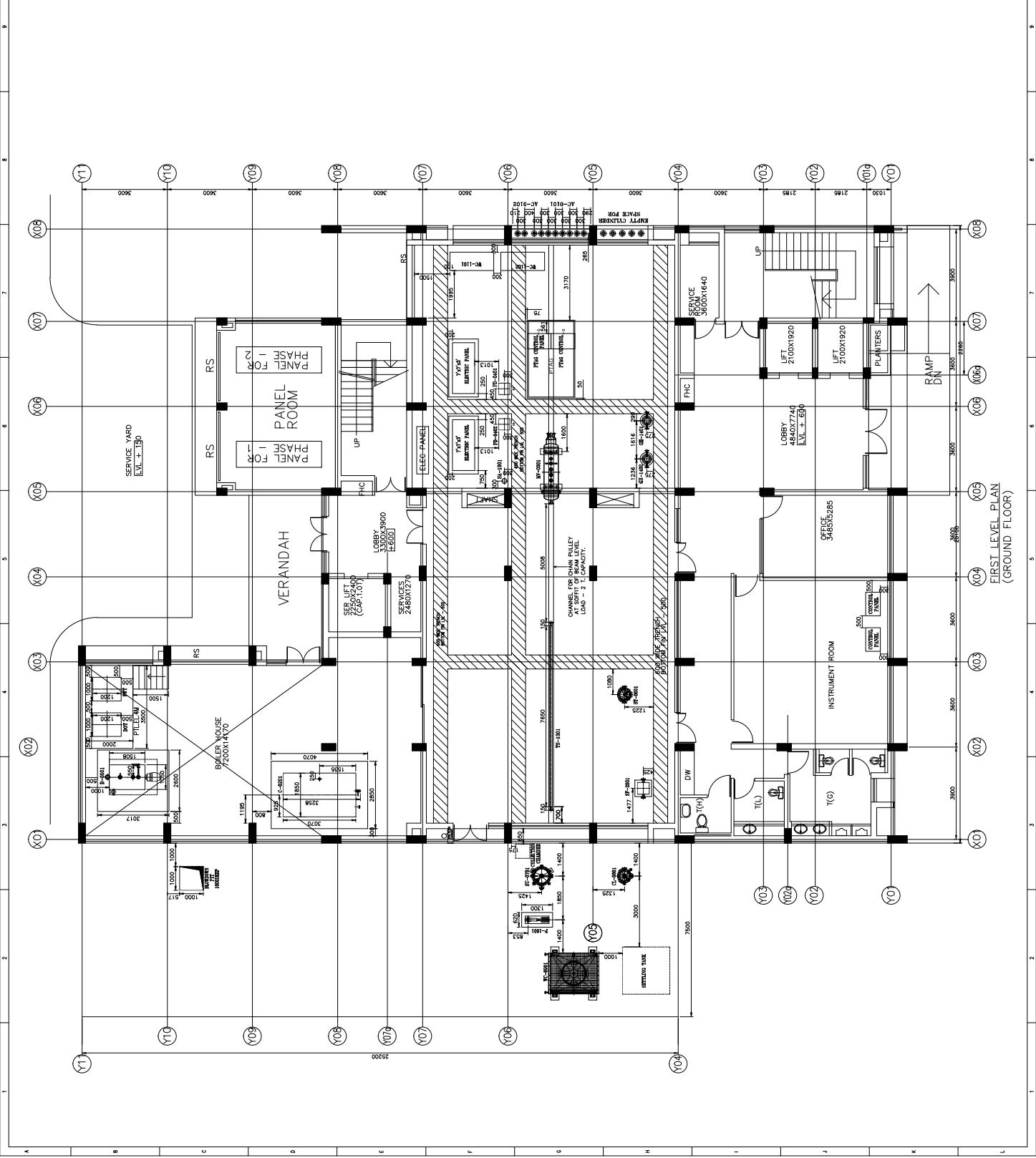
		Required	Witnessed	Observation	
1	Shop inspection	Yes			
2	Hydrostatic test	Yes			
3	Mechanical running test	Yes	Yes		
4	Performance test: shop	Yes	Yes		
5	Performance test: site	Yes	Yes		
6	Complete unit test	Yes			
7	Assembly check	Yes			
8	Post test inspection	Yes	Yes		
9	Driver safeguarding system	Yes			
10	NDE Testing	Yes			
11	Material certificate	Yes		Yes	

NOTES

- 1) Marked '*' shall be furnish by vendor.
- 2) Noise level shall be restricted to 80 dB(A) at 1m distance from the machine surface.
- 3) Vendor shall gurantee about air quality. Air should be 100% oil free and 99% dry.
- 4) Vendor shall gurantee maximum power and other utility consumption required.
- 5) Vendor shall gurantee maximum minimum turn down possible.

Sl. No.	Tag No.	Equipment Name	Qty (Nos)	Size (mm)	Supply / Operating Height (m) / Weight (kg)
01	AC-010/02	ARCON CHARGERS CASINE	2	840 x H.400	
02	C-0201	AIR COMPRESSOR	1	1370 x H205 x W1850	
03	MP-0301	MIXING VESSEL	1	800 x L2680	
04	FD-0401/02	POWDER FEEDER	2	~1475 x H475 x W1260	
05	B-0501	BOILER	1	11608 x W1050 x H1260	
06	ST-0601	SURGE TANK	1	6008 x H800	
07	SI-0701	SCRUBBER TANK	1	6008 x H105	
08	CL-0801	COLLECTION TANK	1	4008 x H130	
09	WC-0901	AIR COOLED HEAT EXCHANGER	1	12126 x W1732 x H-	
10	SA-1001	SOLUBLE AEROSOL	1	820 x H200	
11	WC-1101	WATER COOLER	1	~1850 x H1700 x W1775	
12	-	-	-	-	-
13	IS-1301	TESTING SECTION	1	1008 x L800	
14	GR-1401/02	GAS REGENERATOR	2	840 x H1525 (WITH INSL)	
15	-	PIRG PACKAGE	1	13300 x W3000 x H2200	
16	-	-	-	-	-
17	-	-	-	-	-
18	P-1801	PUMP	1	-	
19	-	-	-	-	-
20	SF-2001	SOLID FILTER BANK	1	1550 x H500 x W850	
21	WH-2101	WASP HEATER	1	-	
22	-	ELECTRICAL PANEL	1	~42150 x H2150 x W950	
23	-	CONTROL PANEL	1	~11000 x H1500 x W825	
24	-	COLLECTION CHAMBER	1	~1500 x H600 x W600	
25	-	SETTLING TANK	1	~15000 x H2000 x W2000	
26	-	PIRG CONTROL PANEL	1	~15000 x H1500 x W600	
27	FWT	FEED WATER TANK	1	13200 x H1100 x W1000	
28	DOT	DAY OIL TANK	1	13200 x H1100 x W1000	

NOTES:-
 1. FOOTPRINTS AND GENERAL ARRANGEMENT DETAILS OR DRAWINGS FOR VENDOR PACKAGES SHALL BE INCORPORATED IN SUBSEQUENT REVISIONS AFTER RECEIPT FROM VENDOR.



CLIENT	INDIAN INSTITUTE OF TECHNOLOGY KANPUR
DETAILS PREPARED BY	CONSULTANT
PROJECT TITLE	NATIONAL AEROSOL FACILITY
DRAWING TITLE	PLAN VIEW OF EQUIPMENT LAYOUT
SCALE	DOCUMENT NUMBER
1:75	LA-02-16-010-300-A1
SHEET	REV.
01	01
00	00



Volume III (Commercial)

1. Commercial terms & conditions

Evaluation of Bids:

- 1.1 A two-stage procedure will be adopted in evaluating the bids: i) Technical evaluation and ii) financial evaluation.
- 1.2 The weightage of technical evaluation will be 60% and of financial evaluation will be 40%.
- 1.3 Technical and price bids should be submitted in separate envelopes. The bids should be submitted as indicated in “Request for Proposal” and addressed to Professor S. N. Tripathi, Department of Civil Engineering, IIT-Kanpur, Kanpur-208016.
- 1.4 Price bids should clearly mention the price of various items, services and taxes separately.
- 1.5 Technical evaluation will be based on the criteria detailed in the tender document. If required, evaluation of the bidder’s resources would be undertaken by the client by visiting the bidder’s premises.
- 1.6 Technically qualified bidders will be evaluated for their financial bids. Each bid will be ranked using a combined technical and financial score and the contract will be awarded to the bidder with the highest score.

General terms and conditions:

1. All the discussions and review meetings required for this work will be held at IIT Kanpur, premises.
2. Bidders should ensure that they qualify for all the items of the Assignment. The bidders shall be firms having experience and expertise in engineering services.
3. The bidders should have experience relevant to the scope of work of this tender.
4. The bidders should have licensed software for any required jobs mentioned in the scope of the work.
5. The bidders should have a well-established Quality Management System in position and it should preferably have an appropriate Bureau of Indian Standards (BIS)/International Organisation for Standardisation (ISO) certification(s). In case of award of the contract bidder to take ISO certification within 6 months.
6. The key professional staff of the bidder’s organisation should have very good knowledge of codes and standards as mentioned in Vol- II of this tender
7. The successful bidder shall be responsible for the correctness and accuracy of the drawings, documents and reports prepared by him. Approval of the drawings and documents by IITK or its representative shall not relieve him of his responsibility for correctness and accuracy of such drawings and documents. No compensation or extra payment shall be made by IITK for any correction or changes made in the execution work.
8. Technical Proposal should provide a brief description of the bidder’s organization.
9. Bidders may request clarification on any of the documents furnished to them with the tender up to seven days before the Proposal submission date. Any request for clarification must be sent in writing by email (snt@iitk.ac.in) to the Client's address (Tel. No. : 0512-2597845). The Client will respond by email to such requests and



copies of the response (including an explanation of query but without identifying the source of enquiry) will be sent to all invited bidders who intend to submit the Proposal, and also posted at Tenders link of IITK website.

10. Proposed staff must have relevant educational qualifications and experience, preferably under conditions similar to those prevailing at the locations of the Assignment.
11. The validity of the offer should not be less than 3 months from the closing date of bid submission.
12. The final responsibility for the correctness, adequacy and accuracy of the designs, drawings, technical specifications, installation and commissioning shall lie with the bidder.
13. IIT Kanpur shall not be responsible for any cost or expenses incurred by the bidders in connection with the preparation and delivery of bids, including costs and expenses related to visits to work site.
14. The acceptance of bids will rest with Director, IITK who does not bind himself to accept the lowest bid and reserves to himself the authority to reject any or all the bids received without assignment of any reason. Also, Director, IITK reserves to himself the right to accept the whole or any part of the bid and the bidder shall be bound to perform the same at the rate quoted.

3. Payment Terms & Conditions/ payment milestones

60 % funds will released after on-site delivery and balance on completion of the scope of work.

4. Performance Bank Guarantee (PBG)

A performance Bank Guarantee needs to be furnished against warranty for the work. Bank Guarantee should be valid for the warranty period. Payment will be released after submission of performance bank guarantee. 10 % of the overall cost (excluding Taxes) has to be provided as performance bank guarantee. IITK shall not be liable to pay any bank charges, commission or interest on the amount of PBG

The vendor shall give Bank Guarantee from any of the following categories of Banks:

- (a) Any Scheduled Bank incorporated in India, Bank Guarantee issued by foreign branches / foreign offices of such Scheduled Banks be counter guaranteed by the Indian Branch of any Scheduled Bank incorporated in India.

OR

- (b) Any Branch of an International Bank situated in India and registered with Reserve Bank of India as scheduled foreign bank.

OR

- (c) Any foreign Bank which is not a Scheduled Bank in India provided the Bank Guarantee issued by such Bank is counter guaranteed by any Branch situated in India of any Scheduled Bank incorporated in India.