

24.5 The Project Manager shall, within fourteen (14) days after receipt of the Implementing Partner's notice under GCC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Forms and Procedures section in the bidding documents, stating that the Facilities or that part thereof have reached Completion as at the date of the Implementing Partner's notice under GCC Sub-Clause 24.4, or notify the Implementing Partner in writing of any defects and/or deficiencies.

If the Project Manager notifies the Implementing Partner of any defects and/or deficiencies, the Implementing Partner shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Sub Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Implementing Partner's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as at the date of the Implementing Partner's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Implementing Partner in writing of any defects and/or deficiencies within seven (7) days after receipt of the Implementing Partner's repeated notice, and the above procedure shall be repeated.

24.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Implementing Partner of any defects and/or deficiencies within fourteen (14) days after receipt of the Implementing Partner's notice under GCC Sub-Clause 24.4 or within seven (7) days after receipt of the Implementing Partner's repeated notice under GCC Sub-Clause 24.5, or if the EESL makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Implementing Partner's notice or repeated notice, or as of the EESL's use of the Facilities, as the case may be.

24.7 As soon as possible after Completion, the Implementing Partner shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the EESL will undertake such completion and deduct the costs thereof from any monies owing to the Implementing Partner.

24.8 Upon Completion, the EESL shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

## **25. Commissioning, Guarantee Test and Operational Acceptance**

### **25.1 Commissioning**

25.1.1 Commissioning of the Facilities or any part thereof shall be completed by the Implementing Partner as per procedures detailed in the Technical Specifications.

The EESL shall, unless otherwise specified in Appendix 6 (Scope of Works and Supply by the EESL)/ Technical Specifications, supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts ,facilities, services and other matters required for Commissioning of the Facilities.



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## 25.2 Guarantee Test (where ever applicable)

25.2.1 The Guarantee Test (and repeats thereof) shall be conducted by the Implementing Partner after Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Contract Documents. The Implementing Partner's and Project Manager's advisory personnel shall attend the Guarantee Test. The EESL shall promptly provide the Implementing Partner with such information as the Implementing Partner may reasonably require in relation to the conduct and results of the Guarantee Test (and any repeats thereof).

25.2.2 If for reasons not attributable to the Implementing Partner, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the SCC or any other period agreed upon by the EESL and the Implementing Partner, the Implementing Partner shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Sub-Clauses 28.2 and 28.3 shall not apply.

## 25.3 Operational Acceptance

25.3.1 Subject to GCC Sub-Clause 25.4 (Partial Acceptance) below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Implementing Partner within the period from the date of Completion specified in the SCC or any other agreed upon period as specified in GCC Sub-Clause 25.2.2 above, but successful Completion of the Facilities has been achieved; or
- (C) the Implementing Partner has paid the liquidated damages specified in GCC Sub-Clause 28.3 hereof; and
  
- (d) any minor items mentioned in GCC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GCC Sub-Clause 25.3.1 have occurred, the Implementing Partner may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Bidding Documents or in another form acceptable to the EESL in respect of the Facilities or the part thereof specified in such notice as at the date of such notice.

25.3.3 The Project Manager shall, after consultation with the EESL, and within forty five (45) days after receipt of the Implementing Partner's notice, issue an Operational Acceptance Certificate.

25.3.4 If within forty five (45) days after receipt of the Implementing Partner's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Implementing Partner in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as at the date of the Implementing Partner's said notice.

## 25.4 Partial Acceptance



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25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Implementing Partner shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

## F. Guarantees and Liabilities

### 26. Completion Time Guarantee

26.1 The Implementing Partner guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified in the SCC) within the Time for Completion specified in the SCC pursuant to GCC Sub-Clause 8.2, or within such extended time to which the Implementing Partner shall be entitled under GCC Clause 40 (Extension of Time for Completion) hereof.

26.2 If the Implementing Partner fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40 (Extension of Time for Completion), the Implementing Partner shall pay to the EESL liquidated damages in the amount computed at the rates specified in the SCC. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as “Maximum” in the SCC. Once the “Maximum” is reached, the EESL may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.

Such payment shall completely satisfy the Implementing Partner’s obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40(Extension of Time for Completion). The Implementing Partner shall have no further liability whatsoever to the EESL in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Implementing Partner from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Implementing Partner under the Contract.

Save for liquidated damages payable under this GCC Sub-Clause 26.2, the failure by the Implementing Partner to attain any milestone or other act, matter or thing by any date specified in Appendix 4 (Time Schedule) to the Contract Agreement and/or other program of work prepared pursuant to GCC Clause 18 (Program of Performance) shall not render the Implementing Partner liable for any loss or damage thereby suffered by the EESL.

### 27. Defect Liability

27.1 The Implementing Partner warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant and Equipment supplied and of the work executed.

27.2 The Defect Liability Period shall be eighteen (18) months from the date of Completion of the Facilities (or any part thereof) or twelve (12) months from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the SCC.



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If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Implementing Partner, the Implementing Partner shall promptly, in consultation and agreement with the EESL regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Implementing Partner shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect. The Implementing Partner shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the EESL
- (b) operation of the Facilities outside specifications provided in the Contract.
- (c) Normal wear and tear.

27.3 The Implementing Partner's obligations under this GCC Clause 27 shall not apply to

- (a) any materials that are supplied by the EESL under GCC Sub- Clause 21.2 (EESL-Supplied Plant, Equipment and Materials), are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein.
- (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the EESL or any matters for which the Implementing Partner has disclaimed responsibility herein.
- (c) any other materials supplied or any other work executed by or on behalf of the EESL, except for the work executed by the EESL under GCC Sub-Clause 27.7.

27.4 The EESL shall give the Implementing Partner a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The EESL shall afford all reasonable opportunity for the Implementing Partner to inspect any such defect.

27.5 The EESL shall afford the Implementing Partner all necessary access to the Facilities and the Site to enable the Implementing Partner to perform its obligations under this GCC Clause 27.

The Implementing Partner may, with the consent of the EESL, remove from the Site any Plant and Equipment or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the EESL may give to the Implementing Partner a notice requiring that tests of the defective part of the Facilities shall be made by the Implementing Partner immediately upon completion of such remedial work, whereupon the Implementing Partner shall carry out such tests.

If such part fails the tests, the Implementing Partner shall carry out further repair, replacement or making good (as the case may be) until that part of the Facilities passes such tests. The tests in character shall in any case be not less than what has already been agreed by the EESL and the Implementing Partner for the original equipment/part of the Facilities.

27.7 If the Implementing Partner fails to commence the work necessary to remedy such defect or any



damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the EESL may, following notice to the Implementing Partner, proceed to do such work, and the reasonable costs incurred by the EESL in connection therewith shall be paid to the EESL by the Implementing Partner or may be deducted by the EESL from any monies due to the Implementing Partner or claimed under the Performance Security.

27.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the EESL because of any of the aforesaid reasons. Upon correction of the defects in the Facilities or any part thereof by repair/ replacement, such repair/replacement shall have the Defect Liability Period extended by a period of twelve (12) month from the time such replacement/ repair of the Facilities or any part thereof.

27.9 Except as provided in GCC Clauses 27 and 33 (Loss of or Damage to Property / Accident or Injury to Workers/Indemnification), the Implementing Partner shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant and Equipment, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence ,fraud, criminal or wilful action of the Implementing Partner.

27.10 In addition, the Implementing Partner shall also provide an extended warranty for any such component of the Facilities and during the period of time as may be specified in the SCC. Such obligation shall be in addition to the defect liability specified under GCC Sub-Clause 27.2.

## 28. Functional Guarantees

28.1 The Implementing Partner guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement, subject to and upon the conditions therein specified.

28.2 If, for reasons attributable to the Implementing Partner, the guaranteed level of the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement are not met either in whole or in part, the Implementing Partner shall, within a mutually agreed time, at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet such Guarantees. The Implementing Partner shall notify the EESL upon completion of the necessary changes, modifications and/or additions, and shall seek the EESL's consent to repeat the Guarantee Test. If the specified Functional Guarantees are not established even during the repeat of the Guarantee Test, the EESL may at its option, either

- (a) Reject the Equipment and recover the payments already made, or
- (b) Terminate the Contract pursuant to GCC Sub-Clause 42.2.2 and recover the payments already made, or
- (c) Accept the equipment after levy of liquidated damages in accordance with the provisions specified in Appendix-8(Functional Guarantees) to the Contract Agreement.

28.3 In case the EESL exercises its option to accept the equipment after levy of liquidated damages, the payment of liquidated damages under GCC Sub-Clause 28.2, up to the limitation of liability specified in



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the Appendix-8 (Functional Guarantees) to the Contract Agreement, shall completely satisfy the Implementing Partner's guarantees under GCC Sub-Clause 28.2, and the Implementing Partner shall have no further liability whatsoever to the EESL in respect thereof. Upon the payment of such liquidated damages by the Implementing Partner, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

## 29. Patent Indemnity

29.1 The Implementing Partner shall, subject to the EESL's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the EESL and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the EESL may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Implementing Partner or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or material not supplied by the Implementing Partner, pursuant to the Contract Agreement.

29.2 If any proceedings are brought or any claim is made against the EESL arising out of the matters referred to in GCC Sub-Clause 29.1, the EESL shall promptly give the Implementing Partner a notice thereof, and the Implementing Partner may at its own expense and in the EESL's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Implementing Partner fails to notify the EESL within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the EESL shall be free to conduct the same on its own behalf. Unless the Implementing Partner has so failed to notify the EESL within the twenty-eight (28) day period, the EESL shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The EESL shall, at the Implementing Partner's request, afford all available assistance to the Implementing Partner in conducting such proceedings or claim, and shall be reimbursed by the Implementing Partner for all reasonable expenses incurred in so doing.

29.3 The EESL shall indemnify and hold harmless the Implementing Partner and its employees, officers and Sub Implementing Partners from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Implementing Partner may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the EESL.

## 30. Limitation of Liability

30.1 Except in cases of criminal negligence or wilful misconduct,



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- (a) the Implementing Partner shall not be liable to the EESL, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Implementing Partner to pay liquidated damages to the EESL and
- (b) the aggregate liability of the Implementing Partner to the EESL, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Implementing Partner to indemnify the EESL with respect to patent infringement or as specified in SCC.

## **G. Risk Distribution**

### **31. Transfer of Ownership**

31.1 Ownership of the Plant and Equipment (including spare parts) procured in the country where the Site is located shall be transferred to the EESL when the Plant and Equipment are reached at site.

31.2 Ownership of the Implementing Partner's Equipment used by the Implementing Partner and its Sub Implementing Partners in connection with the Contract shall remain with the Implementing Partner or its Sub Implementing Partners.

31.3 Ownership of any Plant and Equipment in excess of the requirements for the Facilities shall revert to the Implementing Partner upon Completion of the Facilities or at such earlier time when the EESL and the Implementing Partner agree that the Plant and Equipment in question are no longer required for the Facilities, provided quantity of any Plant and Equipment specifically stipulated in the Contract shall be the property of the EESL whether or not incorporated in the Facilities.

### **31.4 Disposal of surplus material**

Ownership of any Plant and Equipment in excess of the requirements for the Facilities (i.e. surplus material) shall revert to the Contractor upon Completion of the Facilities and Guarantee Test or at such earlier time when the Employer and the Contractor agree that the Plant and Equipment in question are no longer required for the Facilities, provided quantity of any Plant and Equipment specifically stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities. The Contractor shall remove from the site such surplus material brought by him in pursuance of the Contract, subject to the Contractor producing the necessary clearance from the relevant authorities (Customs, Excise etc.), if required by law, in respect of re-export or disposal of the surplus material locally. The liability for the payment of the applicable taxes/ duties, if any, on the surplus material so re-exported and/or disposed locally shall be that of the Contractor.

The Contractor shall also indemnify to keep the Employer harmless from any act of omission or negligence on the part of the Contractor in following the statutory requirements with regard to removal / disposal of surplus material. The Indemnity Bond shall be furnished by contractor as per proforma enclosed in Section-VII (Forms and Procedure) as Form No. 14. Further, in case the laws require the Employer to take prior permission of the relevant Authorities before handing over the surplus material to the Contractor, the same shall be obtained by the Contractor on behalf of the Employer.

31.5 Notwithstanding the transfer of ownership of the Plant and Equipment, the responsibility for care



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and custody thereof together with the risk, of loss or damage thereto shall remain with the Implementing Partner pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant and Equipment are incorporated.

**31.5** In case of two/three Contracts entered into between the EESL and the Implementing Partner as per GCC Sub-Clause 3.6 or where the EESL hands over his equipment to the Implementing Partner for executing the Contract, then the Implementing Partner shall at the time of taking delivery of the Equipment through Bill of Lading or other despatch documents furnish Trust Receipt for Plant, Equipment and Materials and also execute an Indemnity Bond in favour of the EESL in the form acceptable to EESL for keeping the equipment in safe custody and to utilise the same exclusively for the purpose of the said Contract. Proforma for the Trust Receipt and Indemnity bond. The EESL shall also issue a separate Authorisation Letter to the Implementing Partner to enable him to take physical delivery of plant, equipment and materials from the EESL.

## **32 Care of Facilities**

32.1 The Implementing Partner shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 (Completion of the Facilities) or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Implementing Partner shall also be responsible for any loss or damage to the Facilities caused by the Implementing Partner or its Sub Implementing Partners in the course of any work carried out, pursuant to GCC Clause 27 (Defect Liability). Notwithstanding the foregoing, the Implementing Partner shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 32.2 and 38.1.

32.2 If any loss or damage occurs to the Facilities or any part thereof or to the Implementing Partner's temporary facilities by reason of

- (a) (insofar as they relate to the country where the Site is located) nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced Implementing Partner could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 (Insurance) hereof.
- (b) any use or occupation by the EESL or any third party (other than a Sub Implementing Partner) authorized by the EESL of any part of the Facilities.
- (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the EESL, or any such matter for which the Implementing Partner has disclaimed responsibility herein,

the EESL shall pay to the Implementing Partner all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Implementing Partner the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the EESL requests the Implementing Partner in writing to make good any loss or damage to the Facilities thereby occasioned, the Implementing Partner shall make good the same at the cost of the EESL in accordance with GCC Clause 39 (Change in the Facilities). If the EESL does not request the Implementing





Partner in writing to make good any loss or damage to the Facilities thereby occasioned, the EESL shall either request a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the EESL shall terminate the Contract pursuant to GCC Sub-Clause 42.1 (Termination for EESL's Convenience) hereof, except that the Implementing Partner shall have no entitlement to profit under paragraph (e) of GCC Sub-Clause 42.1.3 in respect of any unexecuted Facilities as at the date of termination.

32.3 The Implementing Partner shall be liable for any loss of or damage to any Implementing Partner's Equipment, or any other property of the Implementing Partner used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 32.2 (with respect to the Implementing Partner's temporary facilities), and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 32.2(b) and (c) and 38.1.

32.3 With respect to any loss or damage caused to the Facilities or any part thereof or to the Implementing Partner's Equipment by reason of any of the matters specified in GCC Sub-Clause 38.1, the provisions of GCC Sub-Clause 38.3 shall apply.

### **33 Loss of or Damage to Property; Accident or Injury to workers; Indemnification**

33.1 Subject to GCC Sub - Clause 33.3, the Implementing Partner shall indemnify and hold harmless the EESL and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property (other than the Facilities whether accepted or not), arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Implementing Partner or its Sub Implementing Partners, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the EESL, its Implementing Partners, employees, officers or agents.

33.2 If any proceedings are brought or any claim is made against the EESL that might subject the Implementing Partner to liability under GCC Sub-Clause 33.1, the EESL shall promptly give the Implementing Partner a notice thereof and the Implementing Partner may at its own expense and in the EESL's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Implementing Partner fails to notify the EESL within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the EESL shall be free to conduct the same on its own behalf. Unless the Implementing Partner has so failed to notify the EESL within the twenty-eight (28) day period, the EESL shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The EESL shall, at the Implementing Partner's request, afford all available assistance to the Implementing Partner in conducting such proceedings or claim, and shall be reimbursed by the Implementing Partner for all reasonable expenses incurred in so doing.

33.3 The EESL shall indemnify and hold harmless the Implementing Partner and its employees, officers and Sub Implementing Partners from any liability for loss of or damage to property of the EESL, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34 (Insurances), provided that such fire, explosion or other perils were not caused by any act or failure of the Implementing Partner.

33.4 The party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable



measures to mitigate any loss or damage which has occurred. If the party fails to take such measures, the other party's liabilities shall be correspondingly reduced.

### **34 Insurance**

34.1 To the extent specified in Appendix 3 (Insurance Requirements) to the Contract Agreement, the Implementing Partner shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the EESL, who should not Unreasonably withhold such approval.

#### **(a) Cargo Insurance During Transport**

Covering loss or damage occurring while in transit from the Implementing Partner's or Sub Implementing Partner's works or stores until arrival at the Site, to the Plant and Equipment (including spare parts therefor) and to the Implementing Partner's Equipment.

#### **(b) Installation All Risks Insurance**

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Implementing Partner's liability in respect of any loss or damage occurring during the Defect Liability Period while the Implementing Partner is on the Site for the purpose of performing its obligations during the Defect Liability Period.

#### **(c) Third Party Liability Insurance**

Covering bodily injury or death suffered by third parties (including the EESL's personnel) and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

#### **(d) Automobile Liability Insurance**

Covering use of all vehicles used by the Implementing Partner or its Sub Implementing Partners (whether or not owned by them) in connection with the execution of the Contract.

#### **(e) Workers' Compensation**

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

#### **(f) EESL's Liability**

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

#### **(g) Other Insurances**

Such other insurances as may be specifically agreed upon by the parties hereto as listed in the said Appendix 3.

34.2 The EESL shall be named as co-insured under all insurance policies taken out by the Implementing Partner pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and EESL's Liability Insurances, and the Implementing Partner's Sub Implementing Partners shall be named as co-insured's under all insurance policies taken out by the Implementing Partner pursuant to GCC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and EESL's Liability Insurances. All insurers' rights of subrogation against such co-insured's for losses or claims arising out of the performance of the Contract shall be waived under such policies.



34.3 The Implementing Partner shall, in accordance with the provisions of Appendix 3 (Insurance Requirements) to the Contract Agreement, deliver to the EESL certificates of insurance (or copies of the insurance policies) as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the EESL by insurers prior to cancellation or material modification of a policy.

34.4 The Implementing Partner shall ensure that, where applicable, its Sub Implementing Partner(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Sub Implementing Partners are covered by the policies taken out by the Implementing Partner.

34.5 The EESL shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in Appendix 3 (Insurance Requirements) to the Contract Agreement.

34.6 If the Implementing Partner fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 34.1, the EESL may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Implementing Partner under the Contract any premium that the EESL shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Implementing Partner. If the EESL fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Implementing Partner may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the EESL under the Contract any premium that the Implementing Partner shall have paid to the insurer, or may otherwise recover such amount as a debt due from the EESL. If the Implementing Partner fails to or is unable to take out and maintain in effect any such insurances, the Implementing Partner shall nevertheless have no liability or responsibility towards the EESL, and the Implementing Partner shall have full recourse against the EESL for any and all liabilities of the EESL herein.

34.7 Unless otherwise provided in the Contract, the Implementing Partner shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Implementing Partner as per the procedure outlined in GCC Sub- Clause 34.8 below. The EESL shall give to the Implementing Partner all such reasonable assistance as may be required by the Implementing Partner. With respect to insurance claims in which the EESL's interest is involved, the Implementing Partner shall not give any release or make any compromise with the insurer without the prior written consent of the EESL. With respect to insurance claims in which the Implementing Partner's interest is involved, the EESL shall not give any release or make any compromise with the insurer without the prior written consent of the Implementing Partner.

34.8 (i) wherever total damages/loss of equipment/material, would occur, the Implementing Partner will be entitled to payment of all payments received from the underwriters except the following amounts:

(a) The amount paid to the Implementing Partner under the Contract in respect of equipment/material damaged/lost (excluding the pro-rata initial advance) but including the entire amount of escalation, if any, already paid to the Contractor.

(b) Custom Duties and other taxes and duties which have already been paid by the EESL.

In the event the claim money settled, is less than the total of the amount in a & b above, then the entire claim money settled will be retained by the EESL and the Implementing Partner will forthwith pay the EESL the short fall amount between the claim money and the total of amounts as per a



& b mentioned above.

Subsequent payments, if any, due under the Contract shall be regulated by the relevant terms of payment.

(II) In case of damage to any equipment/material during any stage, the Implementing Partner upon rectification of the damaged equipment to the satisfaction of the EESL shall be paid to the extent of full claims settled by the underwriters.

### 35 Unforeseen Conditions

35.1 If, during the execution of the Contract, the Implementing Partner shall encounter on the Site any physical conditions (other than climatic conditions) or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced Implementing Partner on the basis of reasonable examination of the data relating to the Facilities (including any data as to boring tests) provided by the EESL, and on the basis of information that it could have obtained from a visual inspection of the Site (if access thereto was available) or other data readily available to it relating to the Facilities, and if the Implementing Partner determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Implementing Partner shall promptly, and before performing additional work or using additional Plant and Equipment or Implementing Partner's Equipment, notify the Project Manager in writing of

- a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen.
- b) the additional work and/or Plant and Equipment and/or Implementing Partner's Equipment required, including the steps which the Implementing Partner will or proposes to take to overcome such conditions or obstructions.
- c) the extent of the anticipated delay.
- d) the additional cost and expense that the Implementing Partner is likely to incur.

On receiving any notice from the Implementing Partner under this GCC Sub-Clause 35.1, the Project Manager shall promptly consult with the EESL and Implementing Partner and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Implementing Partner, with a copy to the EESL, of the actions to be taken.

35.2 Any reasonable additional cost and expense incurred by the Implementing Partner in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1 shall be paid by the EESL to the Implementing Partner as an addition to the Contract Price.

35.3 If the Implementing Partner is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40 (Extension of Time for Completion).



### 36 Change in Laws and Regulations

36.1 If, after the date seven (7) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the costs and expenses of the Implementing Partner and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Implementing Partner has thereby been affected in the performance of any of its obligations under the Contract. However, these adjustments would be restricted to direct transactions between the EESL and the Implementing Partner/Assignee of Foreign Implementing Partner (if applicable). These adjustment shall not be applicable on procurement of raw materials, intermediary components etc. by the Implementing Partner/Assignee of Foreign Implementing Partner and shall also not be applicable on bought out items despatched directly from sub-vendor works to site. Further, no adjustment of the Contract Price and/or payment or reimbursement of taxes, duties or levies shall be made on account of variation in or withdrawal of Deemed Export benefits. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the Appendix 2 to the Contract Agreement.

### 37 Force Majeure

37.1 “Force Majeure” shall mean any event beyond the reasonable control of the EESL or of the Implementing Partner, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected.

37.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

37.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party’s performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40 (Extension of Time for Completion).

37.4 The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party’s right to terminate the Contract under GCC Sub-Clauses 37.6 and 38.5.

37.5 No delay or non performance by either party hereto caused by the occurrence of any event of Force Majeure shall

- a) constitute a default or breach of the Contract
- b) (subject to GCC Sub-Clauses 32.2, 38.3 and 38.4) give rise to any claim for damages or additional cost or expense occasioned thereby

If and to the extent that such delay or non performance is caused by the occurrence of an event of Force Majeure.

37.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period



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of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which the dispute shall be resolved in accordance with GCC Clause 6.

37.7 Notwithstanding GCC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the EESL to make payments to the Implementing Partner herein.

### **38 War Risks**

38.1 “War Risks” shall mean any of the following events occurring or existing in or near the country (or countries) where the Site is located:

- a) war, hostilities or warlike operations (whether a state of war is declared or not), invasion, act of foreign enemy and civil war
- b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts, and
- c) any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war.

38.2 Notwithstanding anything contained in the Contract, the Implementing Partner shall have no liability whatsoever for or with respect to

- a) destruction of or damage to Facilities, Plant & Equipment, or any part thereof
- b) destruction of or damage to property of the EESL or any third party
- c) injury or loss of life

if such destruction, damage, injury or loss of life is caused by any War Risks, and the EESL shall indemnify and hold the Implementing Partner harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.

38.3 If the Facilities or any Plant and Equipment or Implementing Partner’s Equipment or any other property of the Implementing Partner used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the EESL shall pay the Implementing Partner for

- a) any part of the Facilities or the Plant and Equipment so destroyed or damaged (to the extent not already paid for by the EESL)
- b) replacing or making good any Implementing Partner’s Equipment or other property of the Implementing Partner so destroyed or damaged so far as may be required by the EESL, and as may be necessary for completion of the Facilities,
- c) replacing or making good any such destruction or damage to the Facilities or the Plant and Equipment or any part thereof.

If the EESL does not require the Implementing Partner to replace or make good any such destruction





or damage to the Facilities, the EESL shall either request a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Sub-Clause 42.1 (Termination for EESL's Convenience).

38.4 Notwithstanding anything contained in the Contract, the EESL shall pay the Implementing Partner for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Implementing Partner shall as soon as practicable notify the EESL in writing of any such increased cost.

38.5 If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Implementing Partner, the Implementing Partner shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Sub Implementing Partners' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the parties will attempt to develop a mutually satisfactory solution, failing which the dispute will be resolved in accordance with GCC Clause 6.

38.6 In the event of termination pursuant to GCC Sub-Clauses 38.3, the rights and obligations of the EESL and the Implementing Partner shall be specified in GCC Sub-Clauses 42.1.2 and 42.1.3, except that the Implementing Partner shall have no entitlement to profit under paragraph (e) of GCC Sub-Clause 42.1.3 in respect of any unexecuted Facilities as of the date of termination.

## H. **Change in Contract Element**

### 39.1 **Changes in the Facilities**

39.1.1 The EESL shall have the right to propose, and subsequently require, that the Project Manager order the Implementing Partner from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities (hereinafter called "Change"), provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract .

39.1.2 The Implementing Partner may from time to time during its performance of the Contract propose to the EESL (with a copy to the Project Manager) any Change that the Implementing Partner considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The EESL may at its discretion approve or reject any Change proposed by the Implementing Partner.

39.1.3 Notwithstanding GCC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Implementing Partner in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 39.2 and 39.3.



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### 39.2 Changes Originating from EESL

If the EESL proposes a Change pursuant to GCC Sub-Clause 39.1.1, it shall send to the Implementing Partner a “Request for Change Proposal,” requiring the Implementing Partner to prepare and furnish to the Project Manager as soon as reasonably practicable a “Change Proposal,” which shall include the following:

- a) brief description of the Change
- b) effect on the Time for Completion
- c) estimated cost of the Change
- d) effect on Functional Guarantees (if any)
- e) effect on any other provisions of the Contract.

39.2.2 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If the rates and prices of any change are not available in the Contract, the parties thereto shall agree on specific rates for the valuation of the Change.

39.2.3 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Implementing Partner under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen (15) percent, the Implementing Partner may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the EESL accepts the Implementing Partner’s objection, the EESL and the Implementing Partner shall agree on specific rates for valuation of the change.

39.2.4 Upon receipt of the Change Proposal, the EESL and the Implementing Partner shall mutually agree upon all matters therein contained including agreement on rates if such rates are not available in the Contract or if the limit of 15% set forth in Clause 39.2.3 has been exceeded. Within fourteen (14) days after such agreement, the EESL shall, if it intends to proceed with the Change, issue the Implementing Partner with a Change Order.

If the EESL is unable to reach a decision within fourteen (14) days, it shall notify the Implementing Partner with details of when the Implementing Partner can expect a decision.

If the EESL decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Implementing Partner accordingly.

39.2.5 If the EESL and the Implementing Partner cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the EESL may nevertheless instruct the Implementing Partner to proceed with the Change by issue of a “Pending Agreement Change Order.”

Upon receipt of a Pending Agreement Change Order, the Implementing Partner shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

### 39.3 Changes Originating from Implementing Partner

39.3.1 If the Implementing Partner proposes a Change pursuant to GCC Sub-Clause 39.1.2, the Implementing Partner shall submit to the Project Manager a written “Application for Change Proposal,” giving reasons for the proposed Change and including the information specified in GCC Sub-Clause



39.2.1.

Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in GCC Sub-Clauses 39.2.4 and 39.2.5

#### **40. Extension of Time for Completion**

40.1 The Time(s) for Completion specified in the SCC shall be extended if the Implementing Partner is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- a) any Change in the Facilities as provided in GCC Clause 39 (Change in the Facilities)
- b) any occurrence of Force Majeure as provided in GCC Clause 37 (Force Majeure), unforeseen conditions as provided in GCC Clause 35 (Unforeseen Conditions), or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 32.2
- c) any suspension order given by the EESL under GCC Clause 41 (Suspension) hereof or reduction in the rate of progress pursuant to GCC Sub-Clause 41.2 or
- d) any changes in laws and regulations as provided in GCC Clause 36 (Change in Laws and Regulations) or
- e) any default or breach of the Contract by the EESL, specifically including failure to supply the items listed in Appendix 6 (Scope of Works and Supply by the EESL) to the Contract Agreement, or any activity, act or omission of any other Implementing Partners employed by the EESL or
- f) any other matter specifically mentioned in the Contract;

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Implementing Partner.

40.2 Except where otherwise specifically provided in the Contract, the Implementing Partner shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the EESL and the Implementing Partner shall agree upon the period of such extension. In the event that the Implementing Partner does not accept the EESL's estimate of a fair and reasonable time extension, the Implementing Partner shall be entitled to refer the matter to the Adjudicator, pursuant to GCC Sub-Clause 6.1 (Adjudicator).

40.3 The Implementing Partner shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

#### **41 Suspension**

41.1 The EESL/ Project Manager may, by notice to the Implementing Partner, order the Implementing Partner to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefore. The Implementing Partner shall there upon suspend performance of such obligation (except those obligations necessary for the care or preservation of the Facilities) until ordered



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in writing to resume such performance by the Project Manager/ EESL.

If, by virtue of a suspension order given by the Project Manager/EESL other than by reason of the Implementing Partner's default or breach of the Contract, the Implementing Partner's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Implementing Partner may give a notice to the Project Manager requiring that the EESL shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39 (Change in the Facilities), excluding the performance of the suspended obligations from the Contract.

If the EESL fails to do so within such period, the Implementing Partner may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 (Change in the Facilities) or, where it affects the whole of the Facilities, as termination of the Contract under GCC Sub-Clause 42.1 (Termination for EESL's Convenience).

#### 41.2 If

- a) the EESL has failed to pay the Implementing Partner any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Implementing Partner may give a notice to the EESL that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the EESL to remedy the same, as the case may be. If the EESL fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Implementing Partner's notice or
- b) the Implementing Partner is unable to carry out any of its obligations under the Contract for any reason attributable to the EESL, including but not limited to the EESL's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities; then the Implementing Partner may by fourteen (14) days' notice to the EESL suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

41.3 If the Implementing Partner's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Implementing Partner as a result of such suspension or reduction shall be paid by the EESL to the Implementing Partner in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Implementing Partner's default or breach of the Contract.

41.4 During the period of suspension, the Implementing Partner shall not remove from the Site any Plant and Equipment, any part of the Facilities or any Implementing Partner's Equipment, without the prior written consent of the EESL.

## 42 Termination

### 42.1 Termination for EESL's Convenience



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42.1.1 The EESL may at any time terminate the Contract for any reason by giving the Implementing Partner a notice of termination that refers to this GCC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Implementing Partner shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the EESL may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d)(ii) below
- (c) remove all Implementing Partner's Equipment from the Site, repatriate the Implementing Partner's and its Sub Implementing Partners' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition.
- (d) In addition, the Implementing Partner, subject to the payment specified in GCC Sub-Clause 42.1.3, shall
  - (i) Deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination
  - (ii) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Facilities and to the Plant and Equipment as at the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its Sub Implementing Partners
  - (iii) deliver to the EESL all non-proprietary drawings, specifications and other documents prepared by the Implementing Partner or its Sub Implementing Partners as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the EESL shall pay to the Implementing Partner the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Implementing Partner as of the date of termination
- (b) the costs reasonably incurred by the Implementing Partner in the removal of the Implementing Partner's Equipment from the Site and in the repatriation of the Implementing Partner's and its Sub Implementing Partners' personnel.
- (c) any amounts to be paid by the Implementing Partner to its Sub Implementing Partners in connection with the termination of any subcontracts, including any cancellation charges.



- (d) costs incurred by the Implementing Partner in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2
- (e) the cost of satisfying all other obligations, commitments and claims that the Implementing Partner may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

## 42.2 Termination for Contractor or Implementing Partner's Default

42.2.1 The EESL, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Implementing Partner, referring to this GCC Sub-Clause 42.2:

- (a) if the Implementing Partner becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Implementing Partner is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Implementing Partner takes or suffers any other analogous action in consequence of debt.
- (b) if the Implementing Partner assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43 (Assignment).
- (c) if the Implementing Partner, in the judgement of the EESL has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this Sub-Clause:

"corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.

"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the EESL 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 EESL of the benefits of free and open competition.

### 42.2.2 If the Implementing Partner

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended (other than pursuant to GCC Sub-Clause 41.2) the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the EESL to proceed
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause





- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner specified in the program furnished under GCC Clause 18 (Program of Performance) at rates of progress that give reasonable assurance to the EESL that the Implementing Partner can attain Completion of the Facilities by the Time for Completion as extended

then the EESL may, without prejudice to any other rights it may possess under the Contract, give a notice to the Implementing Partner stating the nature of the default and requiring the Implementing Partner to remedy the same. If the Implementing Partner fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the EESL may terminate the Contract forthwith by giving a notice of termination to the Implementing Partner that refers to this GCC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Implementing Partner shall, either immediately or upon such date as is specified in the notice of termination,

cease all further work, except for such work as the EESL may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

- (a) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d) below
- (b) deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination.
- (c) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Works. and to the Plant and Equipment as at the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its Sub Implementing Partners.
- (d) deliver to the EESL all drawings, specifications and other documents prepared by the Implementing Partner or its Sub Implementing Partners as at the date of termination in connection with the Facilities.

42.2.4 The EESL may enter upon the Site, expel the Implementing Partner, and complete the Facilities itself or by employing any third party. The EESL may, to the exclusion of any right of the Implementing Partner over the same, take over and use with the payment of a fair rental rate to the Implementing Partner, with all the maintenance costs to the account of the EESL and with an indemnification by the EESL for all liability including damage or injury to persons arising out of the EESL's use of such equipment, any Implementing Partner's Equipment owned by the Implementing Partner and on the Site in connection with the Facilities for such reasonable period as the EESL considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the EESL thinks appropriate, the EESL shall give notice to the Implementing Partner that such Implementing Partner's Equipment will be returned to the Implementing Partner at or near the Site and shall return such Implementing Partner's Equipment to the Implementing Partner in accordance with such notice. The Implementing Partner shall thereafter



without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GCC Sub-Clause 42.2.6, the Implementing Partner shall be entitled to be paid the Contract Price attributable to the Facilities executed as at the date of termination, the value of any unused or partially used Plant and Equipment on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due to the EESL from the Implementing Partner accruing prior to the date of termination shall be deducted from the amount to be paid to the Implementing Partner under this Contract.

42.2.6 If the EESL completes the Facilities, the cost of completing the Facilities by the EESL shall be determined.

If the sum that the Implementing Partner is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the EESL in completing the Facilities, exceeds the Contract Price, the Implementing Partner shall be liable for such excess.

If such excess is greater than the sums due to the Implementing Partner under GCC Sub-Clause 42.2.5, the Implementing Partner shall pay the balance to the EESL, and if such excess is less than the sums due to the Implementing Partner under GCC Sub-Clause 42.2.5, the EESL shall pay the balance to the Implementing Partner.

The EESL and the Implementing Partner shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

### 42.3 Termination by Contractor or Implementing Partner

42.3.1 If

(a) the EESL has failed to pay the Implementing Partner any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) of the Contract Agreement, or commits a substantial breach of the Contract, the Implementing Partner may give a notice to the EESL that requires payment of such sum, requires approval of such invoice or supporting documents, or specifies the breach and requires the EESL to remedy the same, as the case may be. If the EESL fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Implementing Partner's notice, or

(b) the Implementing Partner is unable to carry out any of its obligations under the Contract for any reason attributable to the EESL, including but not limited to the EESL's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities which the EESL is required to obtain as per provision of the Contract or as per relevant applicable laws of the country, then the Implementing Partner may give a notice to the EESL thereof, and if the EESL has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the



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User ID : p.kumar  
Serial No : 11D14A5

Implementing Partner is still unable to carry out any of its obligations under the Contract for any reason attributable to the EESL within twenty-eight (28) days of the said notice, the Implementing Partner may by a further notice to the EESL referring to this GCC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Implementing Partner may terminate the Contract forthwith by giving a notice to the EESL to that effect, referring to this GCC Sub-Clause 42.3.2, if the EESL becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the EESL takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Implementing Partner shall immediately

(a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

(b) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d)(ii)

(c) remove all Implementing Partner's Equipment from the Site and repatriate the Implementing Partner's and its Sub Implementing Partner's personnel from the Site

(d) In addition, the Implementing Partner, subject to the payment specified in GCC Sub-Clause 42.3.4, shall

(i) deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination

(ii) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Facilities and to the Plant and Equipment as of the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its Sub Implementing Partners

(iii) deliver to the EESL all drawings, specifications and other documents prepared by the Implementing Partner or its Sub Implementing Partners as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the EESL shall pay to the Implementing Partner all payments specified in GCC Sub-Clause 42.1.3, and reasonable compensation for all loss or damage sustained by the Implementing Partner arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Implementing Partner pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Implementing Partner that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.



42.4 In this GCC Clause 42, the expression “Facilities executed” shall include all work executed, Installation Services provided, any or all Plant and Equipment acquired (or subject to a legally binding obligation to purchase by the Implementing Partner and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

42.5 In this GCC Clause 42, in calculating any monies due from the EESL to the Implementing Partner, account shall be taken of any sum previously paid by the EESL to the Implementing Partner under the Contract, including any advance payment paid pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement.

### 43. Assignment

43.1 The Implementing Partner shall not, without the express prior written consent of the EESL, assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Implementing Partner shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

### 44. Bankruptcy

If the Contractor shall become bankrupt or have a receiving order made against him or compound with his creditors, or being a corporation commence to be wound up, not being a voluntary winding up for the purpose only of amalgamation / reconstruction, or carry on its business under a receiver for the benefit of its creditors or any of them, the Owner will be at liberty :

to terminate the contract forthwith by notice in writing to the liquidator or receiver or to any person in whom the contract may become vested & to act in the manner provided in GCC clause 42 entitled "Termination" as though the last mentioned notice has been the notice referred to in such clause and the equipment and materials have been taken out of the contractor's hands.

to give such liquidator, receiver or other person, the option of carrying out the contract subject to his providing a guarantee, for the due and faithful performance of the contract up to an amount to be determined by the Owner.

### 45. Contractor Performance & Feedback and Evaluation System

The Employer has in place an established 'Contractor Performance & Feedback System' against which the contractor's performance during the execution of contract shall be evaluated on a continuous basis at regular intervals. In case the performance of the contractor is found unsatisfactory on any of the following four parameters, the contractor shall be considered ineligible for participating in future tenders for a period as may be decided by the Employer.

Financial Status

Project Execution & Project Management Capability

Engineering & QA Capability

Claims & Disputes.

### 46. Fraud Prevention Policy

The contractor along with their associate/collaborator/sub-contractors/sub-vendors/ consultants/service



providers shall strictly adhere to the Fraud Prevention Policy of EESL displayed on its tender website [www.eeslindia.org](http://www.eeslindia.org)

The Contractor along with their associate/collaborator/sub-contractors/sub-vendors/ consultants/service providers shall observe the highest standard of ethics and shall not indulge or allow anybody else working in their organisation to indulge in fraudulent activities during execution of the contract. The contractor shall immediately apprise the Employer about any fraud or suspected fraud as soon as it comes to their notice.



Signature :-  
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User ID : p.kumar  
Serial No : 11D14A5

## SECTION-4

### Technical & Special Conditions of Contract

**NOTE: THE TERMS & CONDITIONS STIPULATED HEREIN (I.E., IN SECTION-4) WILL SUPERSEDE ANY CONTRADICTORY/SIMILAR/OVERLAPPING TERMS & CONDITIONS IN ANY OTHER SECTION/PART OF THE TENDER.**

#### PART A: GENERAL INFORMATION

Name of Work: Design, Manufacture, Supply, Erection, Testing and Commissioning of Improved Air Ventilation & Filtration system along with monitoring system on PAN India basis under Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency (RAISE) programme

NIT/ Bid Document No.: EESL/06/2020-21/RAISE/Open Tender/202109014

Dated: 03/09/2020

**NOTE: Bidders are requested to select the NON-PARTICIPATING Cluster (Cluster -1 & Cluster2) and click on DELETE option and then PROCEED. Bidder has to mandatorily declare the participating Cluster against this tender as per Attachment No.11 attached in Section-6 of tender documents. Only price-bid of the declared Packages in Attachment No.11 shall be opened subject to acceptance of technical bid.**

#### BIDS ARE TO BE SUBMITTED AS FOLLOWS:

*(Please note that, EESL has switched the tender system into e-tendering. Bidders will submit their bid accordingly).*

#### Envelope 1 (Pre-Qualifying documents) should contain following:

1. Bid document fee in the form of Banker's Cheque/ Demand Draft drawn in favor of "Energy Efficiency Services Limited" payable at New Delhi. **(To be submitted in hard copy/ manually in the tender-box on and before Technical E-Bid Opening Date & Time. Scanned Copy to be uploaded at E-tendering portal.)**
2. Bid Security Fee/Earnest Money Deposit as **Attachment-2** by Banker's Cheque / Demand Draft drawn in favour of "Energy Efficiency Services Limited" or in the form of Bank Guarantee as per prescribed format in section 6. **(To be submitted in hard copy/ manually in the tender-box on and before Technical E-Bid Opening Date & Time. Scanned Copy to be uploaded at E-tendering portal)**
3. Letter of the bidder submitting the bid in the form as stipulated in the bid document i.e., as per Bid Form as **Attachment-1** of section - 6, Forms & Procedures. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.
4. Notarised Power of attorney to sign the bid as **Attachment-3** of section 6, Forms & Procedure. Bidders to use their own format. **(Scanned Copy to be uploaded at E-tendering portal).**The submitted power of attorney shall be as per the respective clause in Section-2.
5. Certificate regarding acceptance of important terms and conditions as per ITB clause 4.6 as **Attachment-4**. Format enclosed in section 6. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.
6. Form of acceptance of EESL fraud prevention policy and declaration as per **Attachment- 7** of section 6, Forms & Procedure. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.
7. NEFT/RTGS Bank details as per **Attachment-10** of section-6, forms and procedure. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.
8. Self-Declaration for not been blacklisted by Central/State/UT Government or any Public sector entities duly signed and stamped at company's Letter Head. **(Scanned Copy to be uploaded at E-tendering portal).** Bidder shall clearly mention tender reference number and date of signing the self-declaration.
9. Consortium Agreement (if applicable) on Rs. 100 stamp paper duly signed and notarized. Bidder to use their own format. **(To be submitted in hard copy/ manually in the tender-box on and before Technical E-Bid Opening Date & Time. Scanned Copy to be uploaded at E-tendering portal.)**
10. Declaration form for quoted Cluster(s) (as per format in **Attachment -11 of Section-6**) duly filled and Signed on Company's Letter Head Pad with Company seal. **(Scanned Copy to be uploaded at E-tendering portal).**
11. Certificate Regarding Compliance of Meity Notification Vide File No. 1(10)/2017-Cles Dt. 02.07.18 as per **Attachment-12 of Section-6, Forms & procedures** Duly filled Signed by authorized signatory **(Scanned Copy to**

Signature: p.kumar  
User ID: p.kumar  
Serial No: 1101445

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**be uploaded at E-tendering portal).**

12. Certificate regarding Declaration of Local Content (as per Format in Attachment-14). **(Scanned Copy to be uploaded at E-tendering portal).**
13. Compliance Matrix/Checklist for Bidder as per Annexure-V duly filled and signed on Company's Letter head pad with company seal. **(Scanned Copy to be uploaded at E-tendering portal).**
14. Compliance Matrix/Checklist for Technical and Financial QR as per Annexure-VI duly filled and signed on Company's Letter head pad with company seal. **(Scanned Copy to be uploaded at E-tendering portal).**

**Envelope-II, i.e., Techno-Commercial Proposal of the Bid Should Contain (scanned copies of) the following:**

- i. Deviation statement as per **Attachment-5** of section - 6, Forms & Procedure.  
***NOTE: EESL reserves the right to consider or disregard deviations, and reject bids in case of non-compliance. Bids containing material deviations from or reservation to the terms and conditions and specifications mentioned in the Tender will be treated as non-responsive and will not be considered further.***
- ii. Specific confirmation by the bidder duly signed and stamped on letter head as per Annexure-II
- iii. Techno-commercial bid as indicated in bid document, i.e., **documentary evidences regarding bidder's qualifications to perform the Contract, as required per the Qualifying Requirements along with other documents as mentioned in the Tender Document.**
- iv. One complete set of RFP documents and subsequent amendments (if any), duly signed and stamped on each page.

**Envelope-III should contain Price Bid (Annexure-I to be filled-up online) shall comprise of**

- i. Price Bid in the format prescribed in the tender document for **Cluster-1**
- ii. Price Bid in the format prescribed in the tender document for **Cluster-2**

Price Bid in the format prescribed in the tender document.

Since the bids are to be submitted through E-tendering mode, the prices are to be filled on e-tender portal only and bidders are requested **not to submit the price bid in hard copy at EESL along with the documents. The same will not be entertained.**

Initially, Envelope – I containing documents as stated above will be opened electronically. Envelope-II will be opened on the same day of only those bidders who have submitted EMD and requisite documents in Envelope-I.

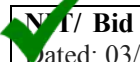
Envelope-III (Price Bid) shall be opened subsequently subject to acceptance of Techno-Commercial Bid. Opening date will be intimated to all those bidders, who are found technically & commercially acceptable to EESL.

Price-Bid of the technically disqualified bidders will not be opened.

On behalf of EESL

Engineer (SCM)

Signature :-  
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MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No : 11014AS



**NT/ Bid Document No.:** EESL/06/2020-21/RAISE/Open Tender/202109014  
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## **PART-B:Definitions**

Following terms used in the document will carry the meaning and interpretations as described below:

**“Affiliate”** shall mean a Company that, directly or indirectly,

i. controls, or

ii. is controlled by, or

iii. is under common control with, a Company developing a Project or a Member in a Consortium developing the Project and control means ownership by one Company of at least 51% (fifty one percent) of the voting rights of the other Company;

**“EIC”** shall mean Engineer or Engineers authorized by EESL for the purpose of this contract. Inspecting Authority shall mean any Engineering person or personnel authorized by EESL to supervise and inspect the erection, commissioning of the IAQ system

**“Bid”** shall mean the Technical and Financial Bid submitted by the Bidder along with all documents/credentials/attachments annexure etc., in response to the bidding document, in accordance with the terms and conditions hereof;

**“Bidder(s)”** shall mean bidding company submitting the Bid and includes Financially Evaluated Company. Any reference to the Bidder includes its successors, executors and permitted assigns as the context may require;

**“B.I.S”** shall mean specifications of Bureau of Indian Standards (BIS);

**“ISHRAE”** shall mean Society of Heating, Refrigerating and Air Conditioning Engineers

**“BoS”** shall mean balance of system;

**“IAQ”** shall mean Indoor Air Quality

**“Comprehensive O&M”** shall mean insurance, onsite warranty, spare parts and operation & maintenance of Project / installations for five years from the date of issuance of completion certificate;

**“Commissioning”** means demonstration of successful operation of the project/ system by the Successful Bidder;

**“RAISE” Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency**

**“OEM”** Original Equipment Manufacturer;

**“PPE”** means Personal Protective Equipment;

**“Project”** shall mean the aggregate of the systems directly or indirectly supports improvement in the Indoor Air Quality System;

**“SI”** shall mean System Integrator shall mean the agency who had carried out the Design, Engineering, Supply, Installation, Testing & Commissioning and O&M of Indoor Air Quality System

**“Performance Test”** shall mean such tests which establish successful installation, commissioning and operation of system at desired level as per the requirement of issuing authority before the issuance of commissioning certificate;

**“AHU”** shall mean Air Handling Unit

**“AMCA”** shall mean Air Movement & Control Association

**“ASHRAE”** shall mean American Society of Heating, Refrigeration & Air-Conditioning Engineers

**“BMS”** shall mean Building Management System

**“BTU”** shall mean British Thermal Unit

**“CFC”** shall mean Chlorofluorocarbon

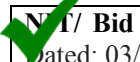
**“CFM”** shall mean Cubic Feet Per Minute

**“CFU”** shall mean Colony Forming Unit

Signature  
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User ID : p.kumar  
Serial No : 11014AS

CSU” shall mean Ceiling Suspended Unit  
DBT” shall mean Dry Bulb Temperature  
DX” shall mean Direct Expansion  
EAC” shall mean Electronic Air Cleaner  
EC” shall mean Electronic Commutated  
ERV” shall mean Energy Recovery Ventilator  
ESP” shall mean Electrostatic Precipitator  
FPD” shall mean Final Pressure Drop  
FPM” shall mean Feet Per Minute  
GSS” shall mean Galvanized Steel Sheet  
HEPA” shall mean High Efficiency Particulate Arrestance  
HFC” shall mean Hydrofluorocarbon  
HRU” shall mean Heat Recovery Unit  
IAQ” shall mean Indoor Air Quality  
IPD” shall mean Initial Pressure Drop  
MERV” shall mean Minimum Efficiency Reporting Value  
Pa” shall mean Pascals  
PM” shall mean Particulate Matter  
RH” shall mean Relative Humidity  
SISW” shall mean Single Inlet & Single Width  
SMACNA” shall mean Sheet Metal & Air-conditioning Contractor’s National Association  
TFA” shall mean Treated Fresh Air Unit  
TVOC” shall mean Total Volatile Organic Compound  
UVGI” shall mean Ultra-Violet Germicidal Irradiation  
VCD” shall mean Volume Control Damper  
VFD” shall mean Variable Frequency Drive  
WBT” shall mean Wet Bulb Temperature  
WG” shall mean Water Gauge

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MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
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## PART C : Scope of Work and Other Terms & Conditions

### 1. INTRODUCTION

Energy Efficiency Services Limited (EESL) is a Joint Venture of NTPC Limited, Power Grid Corporation of India Limited (PGCIL), Power Finance Corporation Limited (PFC) and Rural Electrification Corporation Limited (REC) to facilitate implementation of energy efficiency projects. EESL intends to improve Air Ventilation & Filtration system along with monitoring system under Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency (RAISE) programme. EESL is in advanced stage of discussion with other States of India as well for implementing such projects.

### 2. Project Scope & Technology Selection

Refer Annexure-IV

### 3. Bill of Quantity

Refer Annexure-III

### 4. Qualifying Requirements:

In addition to the satisfactory fulfillment of requirements stipulated under section ITB, the following shall also apply:

Sr No. (A)	Criteria (B)	Documents to be submitted (C)	Particulars in brief of the Documents submitted by Bidder on Covering Letter (D)
1	<p>The bidder should be :</p> <p>A firm registered/incorporated under Companies Act, 1956 or Companies Act, 2013, and further amendment (s)</p> <p style="text-align: center;">OR</p> <p>A limited liability partnership (under the Limited Liability Partnership Act, 2002)</p>	<p>Photocopy of Certificate of Incorporation issued by the Registrar of Companies</p> <p style="text-align: center;">AND</p> <p>Memorandum of Association, Article of Association needs to be attached along with the bid. The bidder should also highlight the relevant provision/article number which highlights the objects relating to the business fields mentioned in the previous column.</p> <p style="text-align: center;">OR</p> <p>LLP Registration Certificate issued by competent Govt. Authority</p> <p>All the bidders shall also provide Copy of GST Registration Certificate and PAN Card.</p>	<p>1. Nature of firm: under Companies Act.....</p> <p>2. Company Incorporation Certificate No. _____</p> <p>Date : _____,</p> <p>3. Article Number in AoA/MoA as per previous column.....</p> <p>4. LLP Registration certificate No .....</p>
2	<p>The bidder should be minimum three (03) years old from the date of bid opening.</p>	<p>Photocopy of Certificate of Incorporation issued by the Registrar of Companies</p> <p style="text-align: center;">OR</p> <p>LLP Registration Certificate issued by competent Govt. Authority (As applicable)</p>	<p>1. Date of registration as per Incorporation Certificate/LLP Certificate</p>
3	<p>The bidder should have valid ISO 9001</p>	<p>Relevant certificate is to be</p>	

	certification which must have min. 6 months of the validity period from the date of opening of technical bid	submitted	
4	<p>The bidder(s) shall be filter manufacturer for indoor air quality (for commercial &amp; industrial applications)</p> <p>OR</p> <p>Heating, Ventilation and air conditioning (HVAC) contractor</p> <p>OR</p> <p>Consortium of Filter manufacturer for indoor air quality (for commercial &amp; industrial applications) AND air quality monitoring system integrator</p> <p>OR</p> <p>Consortium of filter manufacturer for indoor air quality (for commercial &amp; industrial applications) AND Heating, Ventilation and air conditioning (HVAC) contractor</p>	<p>Copy of Excise Duty/GST Registration Certificate as a 'Manufacturer' under the Indian Factories Act, 1948.</p> <p>The submitted document shall clearly justify the manufacturer status of the bidder. In case above mentioned documents are not clarifying the Manufacturer status, then relevant document issued by competent Govt. body/authority shall be submitted by the bidder.</p> <p>[NOTE: Bidder who is participating as consortium partner must NOT participate as individual bidder in this tender]</p> <p>In case of HVAC contractor, Memorandum of Articles shall be submitted.</p>	<ol style="list-style-type: none"> <li>Excise Certificate and GST No. and date .....</li> <li>Memorandum of Articles stating that bidder is HVAC contractor</li> </ol> <p>The submitted document shall clearly justify HVAC contractor status of the bidder. In case above mentioned documents are not clarifying the HVAC contractor status, then relevant document issued by competent Govt. body/authority shall be submitted by the bidder.</p> <ol style="list-style-type: none"> <li>Consortium agreement to be submitted clearly stating that who is the lead bidder and further mentioning the roles and responsibilities of each partner.</li> <li>Filter Manufacturer/HVAC contractor shall be the lead bidder</li> </ol>
5	<p>Bidder should have successfully implemented/executed 'similar work' as mentioned below within the last five (05) years:</p> <p><b>Cluster 1:</b> Enhanced Air Ventilation &amp; Centralized Filtration system or Monitoring system) or any combination of above:</p> <ul style="list-style-type: none"> <li>Single work Order valued 17 Cr crores.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Two work Orders valued 10.68 Crores each.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Three work Orders valued 8.55 Crores each.</li> </ul> <p><b>Cluster 2:</b> Enhanced Air Ventilation &amp; Centralized Filtration system or Monitoring system) or any combination of above:</p> <ul style="list-style-type: none"> <li>Single work Order valued 8.2 Crores.</li> </ul>	<p>Bidder shall provide Copy of all the claimed Work/Purchase Orders/Supply Orders/Contracts/LOAs</p> <p><b>Along with</b></p> <p>Material Receipt Certificates/Work Completion Certificates/Payment Receipts/Client's Letter regarding release of Security Deposit/CPG on successful completion of Order are required to be submitted in order to justify completion of work mentioned in Work Order.</p> <p>The submitted proof must clearly mention value of work executed as asked in the qualifying criteria. Completion certificates must have the</p>	<p>Tabular details comprising of</p> <p>Order No.;</p> <p>Order Date;</p> <p>Client's Name;</p> <p>Description of Project;</p> <p>Supply/Completion Period (with from-/to- dates);</p> <p>Ref. No. &amp; Date of commissioning Certificates/PO/Work Completion Certificates/other documents.</p> <p>Letter from Client/Owner confirming satisfactory performance of the systems from the date of publication of NIT.</p>

	<p>OR</p> <ul style="list-style-type: none"> <li>Two work Orders valued 5.13 Crores each.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Three work Orders valued 4.1 Crores each</li> </ul> <p>‘Similar Works’ means - Design, Manufacture, Supply, Erection, Testing and Commissioning of either Improved Air Ventilation or Filtration system or Monitoring system) or any combination of above</p> <p>In case bidder is participating for more than one Lot, then cumulative sum of the required Past Experience criteria mentioned above against each Lot shall be considered.</p>	<p>reference no of original work order.</p> <p>All bidders must submit the above mentioned documents in line with ‘Similar Works’ defined in previous column.</p>	
6	<p>Bidders should have Average Annual Turnover (ATO) for immediately preceding last three financial years 2017-2018, 2018-19 &amp; 2019-20</p> <ul style="list-style-type: none"> <li><b>For Participating in Cluster-1: INR12.8 Crores</b></li> <li><b>For Participating in Cluster 2: INR 6.15 Crores.</b></li> </ul> <p>Turnover means revenue from operations (excluding other income)</p> <p>In case bidder is participating for more than one Lot, then cumulative sum of the required Turnover criteria mentioned above against each Lot shall be considered.</p>	<p>Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate.</p> <p>The bidder shall submit last 3 years' audited financial statements i.e. 2017-2018, 2018-19 &amp; 2019-20</p>	<p>1. M/s _____</p> <p>2017-18 _____</p> <p>2018-19 _____</p> <p>2019-20 _____</p>
7	<p>The bidder should be profitable in at least 2 financial year out of preceding 3 financial year.</p> <p>Profitability means: Profit after tax</p>	<p>Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate.</p> <p>The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20</p>	<p>M/s _____</p> <p>2017-18 _____</p> <p>2018-19 _____</p> <p>2019-20 _____</p>
8	<p>The Net worth of bidder as on the last day of preceding financial year shall not be less than 100% of the paid-up share capital.</p> <p>Net worth implies to the sum total of the paid-up share capital and free reserves. Free reserves means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further, any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.</p>	<p>Duly authorized copy of audited annual report is to be submitted along with a practicing CA's certificate.</p> <p>The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20</p>	<p>Net worth Details</p> <p>2019-20: _____</p>

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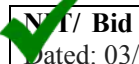


	In case of LLP firm, closing capital of previous year (2019-20) should not be less than opening capital of same period (2019-20). It will be considered as negative net worth and vice versa.		
9	<p>The bidder should have office setup for: Cluster 1: in Delhi/NCR Cluster 2: Mumbai or Delhi/NCR</p> <p>In case a bidder is not having an office setup in Delhi/NCR, then in such a case an undertaking shall be provided by the bidder to setup an office in Mumbai or Delhi/NCR within 30 days of issuance of LoA.</p>	<p>Photocopy of any of the following:</p> <ul style="list-style-type: none"> <li>Valid shops and establishment registration certificate from the local municipality/state/UT</li> </ul> <p>AND/OR</p> <ul style="list-style-type: none"> <li>Notary attested photocopy of duly registered rent/lease agreements copy along with rent paid receipt not older than 3 months from date of tender.</li> </ul> <p>AND/OR</p> <ul style="list-style-type: none"> <li>Utility bill (water, electricity, landline, telephone or postpaid mobile phone or gas bill) not older than last three months from the date of tender.</li> </ul> <p>OR</p> <p>Undertaking on Letter Head to setup office in Delhi/NCR within 30 days of issuance of LoA.</p>	

**Important Points:**

- EESL reserves the right not to seek any deficient document/clarifications from the bidders after opening of techno-commercial bid. If any bid is found to be in non-conformance to the tender conditions or deviating from the tender, EESL reserves the right to out rightly reject such bid without seeking any clarification. Bidder to take cognizance of the same and submit their bid accordingly.
- EESL reserves the right to use in-house available data, if required, to evaluate the tender including data/documents submitted by the vendor in their previous tender(s). however, this should not be understood that relevant documents/certificates or any other requirement as required in the instant RfP is not to be provided by any vendor participating in the tender who has earlier participated in any of the earlier tenders by EESL.
- In case, bidder is unable to produce the audited financial statement for Financial year 2019-20, then for the evaluation purpose (for QR no.6, 7 & 8), last 3 completed financial year would be 2016-17, 2017-18 and 2018-19 considered. Thus, bidder may submit audited financial statement for 2016-17 in place of 2019-20. However, once bidder submits audited financial statement for 2016-17, then in no case, 2019-20 would be considered for evaluation and vice versa.

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**Note:**

All the required documents must be properly annexed and submitted as mentioned above with necessary details in brief in column D.

- “Holding Company “and “Subsidiary “shall have the meaning ascribed to them as per Companies Act, 1956 or, in vogue.
- In case bidder has been found to be defaulting on the delivery/installation period (in LoA issued) as per assessment (supply, installation etc.) will be liable to be rejected.
- In case bidder is not able to furnish its audited financial statements on standalone entity basis, the unaudited unconsolidated financial statements of the bidder can be considered acceptable provided the bidder furnishes the following further documents on substantiation of its qualification:
  - (i) Copies of the unaudited unconsolidated financial statements of the Bidder along with copies of the audited consolidated financial statements of the Holding Company with a letter of undertaking from holding company supported by Board pledging unconditional and financial support. Irrevocable in the format enclosed in Attachemnt-9 of Section-6, Forms & Procedures.
  - (ii) A Certificate from the CEO/CFO of the Holding Company, stating that the unaudited unconsolidated financial statements form part of the Consolidated Annual Report of the Company.
- In case a bidder does not satisfy the financial criteria, the holding company would be required to meet the stipulated turn over requirements, provided that the net worth of such holding company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the holding company. In such an event, the bidder would be required to furnish along with its bid, a letter of Undertaking from the holding company, supported by the Board Resolution, as per the format enclosed in the bid documents (Attachemnt-9 of Section-6, Forms & Procedures), pledging unconditional and irrevocable financial support for the execution of the Contract by the bidders in case of award.
- In case the Bidder meets the requirement of Net worth based on the strength of its Subsidiary(ies) and/or Holding Company and/or Subsidiaries of its Holding Companies wherever applicable, the Net worth of the Bidder and its Subsidiary(ies) and/or Holding Company and/or Subsidiary(ies) of the Holding Company, in combined manner should not be less than 100% of their total paid up share capital. However individually, their Net worth should not be less than 75% of their respective paid up share capitals.
- In case bidder, has been found to be defaulting on the delivery period (in each LoA issued) as per assessment (supply, installation etc.) will be liable to be rejected. Bidder have to provide the quantity (Nos. & Percentage) supplied and installed against each LoA awarded by EESL at the date of submission of bid.
- Net worth means the sum total of the paid up share capital and free reserves. Free reserve means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.
- Other income shall not be considered for arriving at annual turnover.
- The supporting documents in support of above Qualification Requirement should be submitted along with tender document, otherwise Techno-commercial offer submitted by the bidder is liable to be considered as non-responsive.
- All the required documents must be properly annexed and submitted as mentioned above with necessary details in brief.

**Conditions for NSIC Consortium:**

- Consortium is allowed in this tender.
- NSIC Consortium shall consist of maximum Three members including NSIC as lead member.
- In case a group of MSMEs registered with NSIC (under single point registration scheme) form a consortium under NSIC, the Consortium needs to provide an authorization letter from NSIC accepting the terms and conditions of tender (except for those terms and conditions in which NSIC consortia are given special status as per Government of India Policy for the Government Purchase Program) and also provide details of Consortium members, their manufacturing capacities, the share-out of quantities with schedule of supplies as per EESL tender schedule. Further, NSIC consortium mandatorily submits their service tax, pan card and other relevant documents.

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- In this tender, only one bid from NSIC Consortium will be accepted.
- In case of Consortium of NSIC, the lead members/ partners in the consortium shall not separately participate as independent bidder or as members of any other consortium in this bidding process. All bids in contravention of this shall be rejected. NSIC consortium members should be from relevant industry only as mentioned in QR.
- Further, MSMEs are also eligible to participate in tender directly provided they meet all QRs in their individual capacities and are not part of NSIC Consortium or any other Consortium.

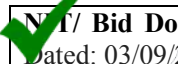
**NOTE: The supporting documents in support of above Qualification Requirement should be submitted along with tender document, otherwise tender will be rejected.**

**If bidder is not meeting any Qualification Requirement as defined above, it should clearly intimate the same in deviation form or on its letter head.**

**EESL reserves the right to reject a bidder if their past supply/ installation track record has been unsatisfactory and if bidder is engaged in a current project but is unable to keep up with the project schedule in quantity/ quality as prescribed by Project In-charge and if EESL has sufficient reason to believe that the Bidder is unsuitable for taking up a project in this tender.**

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## SPECIAL CONDITIONS OF CONTRACT (SCC)

*Special conditions will prevail upon the instruction to Bidders and other terms and conditions*

### 1. Terms of Payment:

Payment towards **Design, Manufacture, Supply, Erection, Testing and Commissioning of Improved Air Ventilation & Filtration system along with monitoring system on PAN India basis under Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency (RAISE) programme** shall be made in the following manner to successful system integrators.

Final System Integration will be considered for raising of invoices

Vendor shall raise the invoice for the 100% of assigned project value against supply, installation & CAMC

**Stage 1:** 60% of the supply value (i.e. Part A1 + B1+ C1+D1+E1) with 100% GST payable thereupon

Required Documents:

- i. Acceptance of LoA and signing of Contract Agreement.
- i. Submission of required Contract Performance Guarantee (CPG) as per the CPG Clause.
- ii. Submission of Project Implementation Schedule along with details of manpower.
- iii. Submission of survey report which includes BOQ, drawings, documents for assigned project.
- iv. Proof of supply of complete system such as LR copies/Eway bills
- v. Copy of Insurance Certificate (transit) for FOR basis
- vi. Signed Indemnity Bond (format will be provided by EESL)

**Stage 2:** 20% of the supply value ((i.e. Part A1 + B1+ C1+D1+E1) & 80% of the installation and commissioning value (i.e. Part A2 + B2+ C2+D2+E2 as per Price Bid) with 100% of GST payable against installation invoice

Required Documents:

- i. Project completion certificate (PCC), to be issued by official of the concerned department of the building OR by EIC of EESL
- ii. Integration of the system with the dashboard along with credentials to the EESL
- iii. Project Report (after 3 months\*from installation date) duly verified by EIC-EESL (format will be provided by EESL)
  - a. Photographs & Videos of pre & post incorporation of the system
  - b. Report must consist of all the IAQ parameters (downloadable from the web portal)
- iv. Handing Over Certificate duly signed by the concerned official of the building along with the annexure components of BOQ installed.

**Stage 3:** 20% of the supply value ((i.e. Part A1 + B1+ C1+D1+E1) & 20% of the installation and commissioning value (i.e. Part A2 + B2+ C2+D2+E2 as per Price Bid) after 12 months of reliable and trouble-free operation from the date of PCC:

Required Documents:

- i. Submission of 1-year maintenance satisfactory certificate to be issued by official of the concerned department of the building OR by EIC of EESL
- ii. Quarterly Preventive Maintenance Reports
- iii. Impact Assessment Report

**Stage 4:** 100% of the CAMC value for 2<sup>nd</sup> year (i.e. Part A3+B3+C3+D3+E3 as per Price Bid) after 24 months of reliable and trouble-free operation from the date of PCC:

Required Documents:

- i. Submission of 2-year maintenance satisfactory certificate to be issued by official of the concerned department of the building OR by EIC of EESL
- ii. Project Report duly verified by EIC-EESL (Format given by EESL)
  - a. Photographs & Videos of pre & post incorporation of the system
  - b. Report must consist of all the IAQ parameters (downloadable from the web portal)
- ii. Quarterly Preventive Maintenance Reports

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Stage 5: 100% of the CAMC value for 3<sup>rd</sup> year (i.e. Part A4+B4+C4+D4+E4 as per Price Bid) after 36 months of reliable and trouble-free operation from the date of PCC:

Required Documents:

- i. Submission of 3<sup>rd</sup> year maintenance satisfactory certificate to be issued by official of the concerned department of the building OR by EIC of EESL
- ii. Project Report duly verified by EIC-EESL (Format given by EESL)
  - a. Photographs & Videos of pre & post incorporation of the system
  - b. Report must consist of all the IAQ parameters (downloadable from the web portal)
- iii. Quarterly Preventive Maintenance Reports

Note: If any additional system (As mentioned in price bid table), the invoices shall be raised in above mentioned manner

**Note: The Price will remain firm till the execution of the contract.**

**Other terms and conditions related to payment terms:**

- At the time of payment of bills, the income tax, if any, shall be deducted at source as per Government rules and guidelines as may be prevailing at the time of payment. Further, for availing the benefit of lower income tax rates supplied from outside the Purchaser's country, Supplier shall provide Income Tax Clearance Certificate (ITCC)/ Tax Residency Certificate or any other relevant document/certificate as per prevailing law, from concerned tax authorities for claiming lower tax deduction, if any.
- All the invoices shall be submitted to EESL for payment, once in a month only. Payment will be made to the bidder within 30 Days after submission of Invoice complete in all respect i.e. with all the required documents and compliance of relevant terms & conditions of LOA duly accepted & certified by EIC, EESL
- If the invoice is incomplete in any respect or if there is any non-compliance with relevant Terms & Conditions of LOA, counting of 30 days' due date shall start from the date of submission of all necessary documents provided relevant terms & conditions of LOA have been fulfilled.

**2. Completion Time**

Entire material to be delivered and complete system integration as per this RFP document is to be completed as per the below project timelines and as per the (Project Scope & Technology Selection of the Section-4.

The time lines for Completion of the EPC Works is 60 days from the date of issuance of allocation of site.

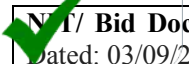
S.No.	Activity	Milestone Date	Remarks
1.	Allocation of project site (SAP release order) by EESL	Zero Date (D)	
2.	Site Survey	D+10	a. Submission of survey report to EESL (format will be given by EESL) b. Submission of proposed system along with the detailed BOQ, drawings, technical specifications etc. along with the implementation schedule.
3	Delivery of material onsite	D+20	Request for PDI (pre-dispatch inspection) to EESL
4	Delivery of material onsite	D+45	Delivery of complete system onsite.
5	Implementation of system	D+60	Complete Installation of system displaying the results on the server and App

**3. Part Commissioning – Part Installation is NOT allowed.**

**4. New technology / upgradation**

The Bidder is responsible for replacement of equipment (if any) during the O&M period at free of cost. The Bidder is free to use the commercially established new technology(ies)/ upgrade the existing equipment used in the IAQ

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system during the O&M period. In such a case, the Bidder has to plan the activities in a manner without effecting the minimum guaranteed improvement from the IAQ system

## 5. Warranty (CAMC)

Warranty herein means Comprehensive Annual Onsite Maintenance for 3 years.

Warranty shall also include the following, but not limited to:

- The mechanical structures, electrical works and overall workmanship of the IAQ systems must be warranted for a minimum of 3 years (from the date of PCC)
- The bidder must ensure that the goods supplied under the Contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.
- During the period of Warranty / Guarantee the bidder shall remain liable to replace any defective parts, that becomes defective, of its own manufacture or that of its sub-SIs, under the conditions provided for by the Contract under and arising solely from faulty design, materials, workmanship or any reason attributable to works carried out by the bidder, provided such defective parts are not repairable at Site. After replacement, the defective parts shall be returned to the bidders works at the expense of the bidder unless otherwise arranged.
- During the Operation & Maintenance and guarantee period, the bidder shall be responsible for any defects in the work or due to use of sub-standard materials in the work. Any defects in the work during the guarantee period shall therefore, be rectified by the bidder without any extra cost within a reasonable time as may be considered from the date of receipt of such intimation from the EESL/entity failing which the EESL reserves the right to take up rectification work at the risk and cost of the bidder.
- Successful bidder shall do the preventive maintenance at the PMR: interval of every 3 months
- During the project cost, all the consumables or related expenditure is in the scope of bidder for the successful working of the system (within acceptable limits).

Note: Except the accidental cases, all the cost for ensuring the system is in the scope of bidder. No extra cost to be paid.

## 6. Evaluation Criteria

Cluster 1: States: Delhi NCR/UP/Madhya Pradesh/ Chhattisgarh/Uttar Pradesh/ Bihar/ Jharkhand/ Rajasthan/ Punjab/ Haryana/ Rajasthan/ Gujarat

Cluster 2: States: Maharashtra/ Karnataka/ Telangana/ Odisha/ Andhra Pradesh/ Tamil Nadu/ Kerala/ NE regions/West Bengal

- Bidders can participate in Cluster 1 & Cluster 2 if they can manage to accomplish the suggested timeline as per the Scope of Work and bidders meets the cumulative qualifying requirements for participated clusters. Bidders need to submit an undertaking mentioning the clusters for which they are participating in the format given at [Attachment-11 of Section-6](#).
- Tender shall be evaluated for complete scope of work. Selection of bidder will be done on the technically acceptable, lowest evaluated cost basis of Price-Bid for each cluster.
- Price bid should be unconditional, failing which the bid shall be summarily rejected. The price to be quoted as per the prescribed format of price bid. Price shall remain firm till the execution of the contract.
- Each cluster shall be evaluated individually and the evaluation will be done considering the prices **exclusive of GST rates (i.e. Total landed cost of Part A+B +C of price bid of each cluster under column 6 of price bid)**.
- In view of the large tender quantity, EESL reserves the right to split the total order quantity amongst more than one supplier OR to award it to single successful bidder. The allocation of quantity among bidders other than L-1 (who matches the L-1 price) shall be based on the price bid hierarchy, i.e. L1, L2 and so on subject to matching the L-1 price for complete scope of work. In case the complete quantity does not get covered as per the above-proposed arrangement, then the original hierarchy shall be taken into consideration.

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- The distribution pattern for splitting the order in **Cluster 1 & Cluster 2** as deemed suitable at matched rate will be as indicated below.

In case of Distribution between	Ratio in percentage
Two Parties ( L1 : L2)	60% : 40%
Three Parties (L1 : L2 : L3)	50% : 30% : 20%
Four Parties (L1 : L2 : L3:L4)	40% : 30% : 20% : 10%:
Five Parties (L1 : L2 : L3 :L4:L5)	30% : 20% : 20% : 15%: 15%
Six Parties (L1 : L2 : L3 :L4:L5:L6)	30% : 20% : 20% : 15%: 10%: 5%

- The award to L2, L3,L4,L5,and L6 shall be subject to their acceptance of L1 rates with all other terms and conditions as per tender. In case of more than six bids are received, distribution will be done in only Two/three parties, as the case may be. However, in case L2 and/or L3 and/or L4 bidder does not match the prices of L1 bidder on for the above said quantities for complete scope of work including warranty, EESL reserves the right to approach L5 or L6 etc. parties in that sequence. Further, in case a party is not able to supply quantity allocated to them as per scheduled timelines, EESL reserves the right to shift the part/full quantity to other bidder, who has matched the price. However, the distribution shall be on EESL's sole discretion and in a fair/justifiable manner.

Further, in case a party is not able to supply quantity allocated to them as per scheduled timelines, EESL reserves the right to shift the part/full quantity to other bidder, who has matched the price.

- EESL reserves the right to divert the awarded quantity of successful bidder if the bidder does not perform within first two weeks as per the schedule.
- The terms and conditions pertaining to MSEs shall be referred at clause 2.4 of section II of this tender and shall be applied accordingly.
- If any other unforeseen situation/s arise apart from those mentioned above, decision of EESL should be binding on the Bidders.
- However, bidder has to ensure that the project completion period for the awarded work as per the RfP timelines. If any other unforeseen situation/s arise apart from those mentioned above, decision of EESL shall be binding on the Bidders.
- However irrespective of the qty. awarded, bidder has to ensure that the project completion period is per the timelines of the tender.
- In case of submission of Udyog Aadhar Memorandum/Udyam Registration to claim benefits applicable to MSEs, NIC (National Industrial Classification) code/ NIC Code Group mentioned below at serial no 1 & serial no 2 below shall be acceptable as a proof of the fact that the bidder is registered as MSE for the tendered item.

Sr. No	NIC Code Group	5 Digit NIC Code	Description
1	353	35302	Production and distribution of cooled air and chilled water for cooling purposes
2	432	43222	Installation of heating systems (electric, gas and oil), furnaces, cooling towers, non-electric solar energy collectors etc

**Note: If NIC codes as mentioned above are not found in the submitted Udyog Aadhar Memorandum/Udyam Registration, then in such a case the benefits applicable to MSEs shall NOT be given to the bidder.**

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User ID : p.kumar  
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## 7. Liquidated Damages and Penalties

In case of any delay in the execution of the SUPPLIES AND INSTALLATION, beyond the stipulated time schedule including any extension permitted in writing, EESL reserves the right to recover from the bidder for the loss incurred due to delay in commissioning as tabulated below subject to a maximum of 10% of the total value of the contract. However, the LD will not be applicable for the period if delay is not on the part of Successful Bidder.

***\*If there is any delay in commissioning of project beyond 60 days, EESL reserves the right to terminate the bidder and the bidder shall reimburse the loss incurred by EESL due to the project.***

Alternatively, EESL reserves the right to purchase of the material and completion of the works from elsewhere at the sole risk and cost of the successful bidder/ SI and recover all such extra cost incurred by EESL in procuring the material from resources available including EMD/Bid security/ encashment of the bank guarantee or any other sources etc. Further, if any extra cost is incurred by EESL due to delay in work completion by the party beyond the completion time as per PO/LOA, the same shall be recovered from the party's Invoice/EMD/BG etc.

In addition to above, penalty will be applied as follows which shall be over and above the LD Provisions:

**Penalty for non-working of Monitoring system:** The Bidder/SI shall ensure that the connectivity of the if the monitoring system of the EESL or its partner (appointed agency) is functional at all times. The system should have an ability to send data such that the data is not lost due to performance. The information should be shared with trusted systems only and should not be available to any unknown system. The penalty shall be levied if systems doesn't meet the min. requirements after 1 day (24 hours) from the date of intimation of issue through Toll Free No/ Letters/ Emails/ SMS/ verbal etc. In can of meeting of even one parameter,  
Total Penalty: No. of downtime Days x 10,000 Rs. /day.

- Exceeding of acceptable pressure drop
- Air Quality Parameters
- Total Penalty: No. of downtime Days x 100 Rs. /day.
- Bidders must ensure the availability and connectivity to be at least 99%

Indoor AQI		Outdoor AQI
0-50	Good	0-250
51-100	Moderate	250-500
100-150	Unhealthy (sensitive people)	500-750
150-200	Unhealthy	>750

The bidder shall ensure to meet the threshold values (as specified in technical specifications), without excess pressure drop. However, penalty shall not be applicable for the period if delay is not on the part of Successful Bidder.

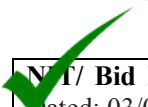
## 8. Adjudicator:

Adjudicator under the contract shall be appointed by the Appointing Authority i.e. MD (EESL). If the bidder does not accept the Adjudicator proposed by EESL, it should so state in its bid form and make a counter proposal of an adjudicator. If on the day the contract agreement is signed, the EESL and contractor have not agreed on the appointment of adjudicator, the adjudicator shall be appointed, at the request of either party, by the appointing authority specified.

## 9. Arbitration:

Arbitration shall be carried out as per Arbitration Act 1996 and its subsequent amendment. The Contract shall be governed by and interpreted in accordance with the laws in force in India. The courts of Delhi shall have exclusive jurisdiction in all matters arising under the contract.

Signature :-  
Subject : CN=PRASHANT KUMAR, ST=DELHI, O=D.2.5.4.17=110003, OU=SUPPLY CHAIN  
MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No : 11014AS

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**10. Contract Performance Guarantee:**

The successful bidder shall furnish the CPG in the form of Demand Draft/ Pay Order or Bank Guarantee for 10% of contract value (Supply +Installation) within 30 days from the date of issued LoA. The Bank Guarantee must be valid to cover O&M Period (3 Years) + Three Months Claim Period

Any delay in submission of SD/CPG shall be deemed as accruing of financial benefit to the supplier and EESL may take necessary interest penalty recovery action (interest @ SBI's MCLR + 2 %) from the payments due to the supplier for the period of delay. However, this provision does not bind EESL in any way from proceeding against the supplier (including forfeiture of EMD, cancellation of the empanelment/LOA, etc.) for non-compliance towards non-submission of the SD/CPG.

Bank guarantee shall be from any Nationalized Banks/other scheduled private banks as per list given in RfP. EESL shall at his discretion have recourse to the said Bank Guarantee for the recovery of any or all amount due from the bidder in connection with the contract including of guarantee obligations.

Failure of the Successful Bidder to comply with the requirements of IFB/RFP shall constitute sufficient grounds for the annulment of the award and forfeiture of the Contract Performance Guarantee.

This Bank Guarantee shall be effective only when BG issuance message is transmitted by issuing bank through SFMS to

IDFC Bank Ltd.  
IFSC code: IDFB0020101  
Branch Name: Soodh Birla Towers, Barakhamba Road new Delhi- 110001

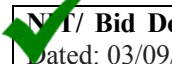
The Message code to be used by the bank will be the following: -

Code	Purpose
IFN 760	Confirmation of Bank Guarantee
IFN 767	Amendment in Bank Guarantee

**11. Quality Control /QAP/ Inspection by EESL**

- I. Submission of the QAP plan, production schedule, pre-dispatch inspection plan shall be submitted by all the successful bidders within 7 working days of issuance of LoA".
- II. The successful bidder shall be wholly responsible for the quality and performance of the product as per the tendered technical specifications.
- III. EESL reserves the right to visit the manufacturing site or the supply chain for quality inspection at any time. EESL at its discretion may order the testing of random samples (upto 5 times during the supply phase) either at the successful bidder's premises (if an NABL/ILAC-accredited Testing Laboratory is available) or at any other third-party filter accredited laboratory at cost of the implementation partner(s).
- IV. After testing, if product is found not matching the specifications at given test parameters, EESL at its discretion may order for cancellation of complete order or cancellation of the complete lot of product. The complete loss shall be to the account of the supplier.
- V. The items will be supplied in proper packing (as per relevant IS, if any) to avoid any damage during transit, storage and delivery. The successful bidder shall be responsible to transport and insure the items till their delivery at project site.
- VI. Inspection / Checking / Testing
- VII. Within 7 days after Award of LoA, Bidder will submit QAP to EESL for Quality Assurance.

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User ID : p.kumar  
Serial No. : 11014AS



## Inspection

All materials/equipment manufactured by the bidder against the Letter of Award (LOA) shall be subject to inspection, check and/or test by the EESL or its authorized representative at all stages and place, before, during and after the manufacture.

If upon delivery, the material / equipment does not meet the specifications, the material / equipment shall be rejected and returned to the supplier for repairs / modification, etc. or for replacement. In such cases, all expenses including the to-and-fro freight, repacking charges, any other costs, etc. shall be to the account of the implementation partner.

All tests shall be carried out as per relevant IS/ISO standards with latest amendment, and the implementation partner shall submit the relevant test reports.

## Tests

The item(s) being supplied should be as per the standard mentioned in the RFP.

During the tender duration, EESL at successful bidder's cost shall conduct additional type tests at NABL-accredited (implementation partner(s)-owned/third party) laboratory to maintain check on the supplied product. The random sample for such tests would be identified by EESL and can be from the manufacturing/supply chain/ customer facility.

## Pre-dispatch Inspection Tests(PDI)

Quality assurance team under SCM dept. shall carry out inspection of manufacturing plant and only after all test are clear as per EESL tender specs MD CC shall be issued to vendor for dispatch of material. The successful bidder shall maintain and provide statutory test certificates for each supplied batch, confirming compliance to the technical specifications and other tender/LOA requirements. The Test Certificate needs to be transmitted electronically to EESL at least 48 hours in advance of dispatch date.

## Documentation along with supply of items

The bidder(s) shall provide the following documents (both hard copy and soft copy) to EESL for reference:

- Manual / Guide: User Manuals, FAQ, OEM Functional Manuals and Installation Guides, Business Process Guides and Troubleshooting Guides
- Certificates:  
The above-mentioned documents shall be provided in the word format to provide flexibility for customization, if required.

## 12. Earnest Money Deposit (EMD)/Bid Security

Amount of Bid Security – As mentioned in Section-1

The bidder shall furnish, as part of its bid, a bid security in a separate envelope. The bid security shall, at the bidder's option, be in the form of a Banker's cheque, Demand Draft in favor of "Energy Efficiency Services Limited" or a bank guarantee as per format at Attachment 2 of Section-6. Bid security/EMD shall remain valid for a period of 45 days beyond the original bid validity period of 180 days, i.e. 225 days from date of bid opening. If there is any extension in bid validity period, then EESL/SNA may ask the bidder to extend the validity of bid security. The details of EMD instrument has to be submitted in relevant field/column of online module. Tenders without Earnest Money Deposit is liable to be rejected. It should be ensured by the bidder that the original DD/ BG is received by EESL/SNA before opening time of techno-commercial bids for verification of the details of DD given online by the bidders. The tender submission, tender closing and opening will be done electronically and online. EESL will not be responsible for any delay, loss or non-receipt of Tender Document Cost sent by post/courier. The instrument should reach in original to EESL office before the Bid Opening date. Bids not accompanied with the requisite tender document cost may not be opened. The bid securities of unsuccessful bidders will be returned as promptly as possible after the award is made to lowest evaluated technically acceptable bidder. The bid security of the successful bidder will be returned when the bidder has signed the contract agreement, and has furnished the required performance security/CPG/BG to the respective SNA.

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MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No. : 11014AS

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The bid security may be forfeited if:

- a) If the bidder withdraws its bid during the period of bid validity as specified in the bid.
- b) If the bidder does not accept computational/arithmetical error correction made by EESL and as explained in “Financial Evaluation” section of the Bid/ RFP document.
- c) If the bidder does not accept assumptions, estimations etc. used for evaluation of bids as specified by EESL in tender documents and revision of his bid accordingly, in case other assumptions are used. If the bidder does not accept the sharing as specified in the bid.
- d) If the Bidder refuses to withdraw, without any cost to the EESL, any deviation not listed in Attachment-5 of Section-6 but found elsewhere in the bid; or In the case of successful bidder, if the bidder fails within the specified time limit:
  - To sign the contract agreement within 15 days of placement of LoA.
  - To furnish the required performance guarantee, in accordance with the tender document.

13. EESL reserve the right for quantity variation up to +/-20%. However, amendment shall be given prior to supply of the material or execution of work.

14. Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc. Successful bidder is to indemnify EESL for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by successful bidder as per settlement solely. EESL has no role to play in this matter.

15. Successful bidder is to submit interchangeability certificate for its product supplied for replacement during warranty and maintenance period and even when it is purchased from open market. In case due to change in technology, the supplied product is not available during warranty/ maintenance period than the improved version of product can be used in warranty/ maintenance period with same or improved technical parameters or the combination thereof after written communication of Engineer in Charge at same cost & terms and conditions. Successful Bidder, on whom letter of award has been placed, has also to confirm that the price of improved version of product is not lesser than the original product or its parts in comparison.

16. The Bidder shall be deemed to have examined the Bid document, to have obtained his own information in all matters whatsoever that might affect carrying out the Works in line with the Scope of Work specified in the document at the offered rates and to have satisfied himself to the sufficiency of his Bid. The bidder shall be deemed to know the scope, nature and magnitude of the work and requirement of materials, equipment, tools and labour involved, wage structures and as to what all works he has to complete in accordance with the Bid documents irrespective of any defects, omissions or errors that may be found in the Bid documents.

**17. Insurance:**

The Successful Bidder(s) shall take an insurance policy for transit-cum- storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The Bidder shall also take appropriate insurance during the operation and maintenance period.

**18. Transportation, Demurrage Wharfage, Etc.:**

SI is required under the Contract to transport the Goods to place of destination defined as Site. Transport to such place of destination in India including insurance, as shall be specified in the Contract, shall be arranged by the SI, and the related cost shall be included in the Contract Price.

19. Subsequent to an order being placed against your quotation, received in response to this ‘enquiry’, if it is found that the materials supplied are not of the right quality or not in accordance with our specifications (required by us) or received in damaged or broken conditions, not satisfactory owing to any reason of which we shall be the sole judge, we shall be entitled to reject the materials, cancel the contract and buy our requirement from the open market / other sources and recover the loss, if any, from the supplier reserving to ourselves the right to forfeit the security deposit, furnished by the supplier against the contract. The supplier will make his own arrangements to remove the rejected material within a fortnight of instruction to do so. Thereafter material will lie entirely at the supplier’s risk and responsibility and storage charges, along with any other charges applicable, will be recoverable from the supplier.

Signature :-  
Name :- P. KUMAR  
User ID :- p.kumar  
Serial No :- 1101445

20. We reserve the right to accept or reject any bid in full or in part without assigning any reason thereof. We also reserve the right to split and place order on more than one suppliers.
21. The bidder should not have been black-listed by any Central / State Government or Public Sector Undertakings. If at any stage of tendering process or during the currency of the contract, any suppression / falsification of such information is brought to the knowledge, EESL shall have the right to reject the proposal or terminate the contract, as the case may be, without any compensation to the tenderer & forfeiture of bid security/EMD/CPG.

**22. Correspondence: Post award, all correspondence by successful bidder shall be addressed to as brought out below:**

- **CGM (Contracts)** – for all issues pertaining to clarifications w.r.t contractual and commercial issues or requiring amendments on the terms and conditions of LOA in general.
- **Engineer-In-Charge (EIC)** - all the activities pertaining to execution of the works at site, as per the provisions under the terms of the LOA, on behalf of EESL.

**22. Compliance with all Statutory Regulations:**

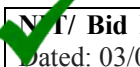
- a. Compliance of all the statutory requirements as may be required w.r.t the activities to be performed to execute the scope of work under the subject LOA including the requirements under Contract Labor Acts, safety of the workmen deployed, etc., shall be the responsibility of the successful bidder including all the expenditure incurred for the same. This includes all the requirements w.r.t the workmen under Sub-contractor(s) also. The successful bidder shall submit the documentation to EESL, on monthly basis, as required under the applicable statutory requirements.
- b. Successful bidder shall indemnify EESL for any accident, injury met by its labor, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by successful bidder as per settlement solely. EESL has no role to play in this matter.
- c. Disposal of failed BOQ items shall be arranged by the successful bidder, at their own cost, as per the relevant provisions of various acts/regulation in force from time to time.
- d. Vendor to provide/ submit PF and ESI compliance documents to EESL on monthly basis during the contract term. Further, please make sure to have the stipulation that "if vendor do not provide PF and/or ESI or document demanded by EESL within the stipulated time lines, then EESL reserves the right to terminate the contract at vendor's risk and cost".
- e. Vendor to ensure that the team deployed at site is equipped with proper safety gears such as safety shoes, reflective jackets, helmets, harness etc. The team must have proper Identity card.

**23. Documentation: File names of all the documents submitted in soft form shall contain the topic of the subject document.**

**24. SAFETY COMPLIANCE:**

- a. Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc.
- b. Successful bidder(s) to indemnify EESL for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or successful bidder as per settlement shall pay any other person working for him solely. *EESL has no role to play in this matter.*
- c. The Bidder is advised to take out insurance for the period of the Contract, on the terms specified in the Special Conditions, including, but not limited to, the following:
  - Professional liability insurance;
  - Personal liability insurance;
  - Equipment insurance covering loss of or physical damage to all equipment acquired, used, provided or paid for by the Employer within the context of this Contract; and
  - Motor vehicle third party liability insurance and motor vehicle comprehensive insurance for the vehicles acquired in connection with this Contract.

Signature: \_\_\_\_\_  
 Subject: CN=PRASHANT KUMAR, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN  
 MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
 User ID: p.kumar  
 Serial No: 11014AS

 <p><b>NT/ Bid Document No.:</b> EESL/06/2020-21/RAISE/Open Tender/202109014        Dated: 03/09/2020</p>	<p>SECTION-4 (Technical&amp; SCC)</p>	<p>Page 19of103</p>
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- d. EESL will not be responsible in case any accident/ mis-happenings with consultant employee or contract person and for any equipment damage or theft occurs and in no case EESL shall pay for it.
- e. During the period of installation, successful bidder should ensure implementation of SAFETY measures to ensure SAFETY of working personnel, as per all applicable laws in general
- f. Suitable work instructions/procedures shall be prepared for each type of work location and a competent person possessing valid certificate w.r.t SAFETY issues shall train the working personnel at regular intervals. **A safety inspector as coordinator shall be nominated and his details provided to EESL Registered Office.**
- g. All the working personnel shall be provided with appropriate Personnel Protection Equipment such as Safety Jackets, PPE kits, sanitizers, mask and other accessories whatever, whenever and wherever required.
- h. Successful bidder shall arrange to carryout safety Audit at regular intervals by a competent person possessing valid certificate w.r.t SAFETY issues and suitable remedial measures shall be taken based on the findings/recommendation of the Safety Audit. M/s EESL would not be hold responsible for any incidental accidents and has right to take appropriate actions, at the sole risk and cost of vendor if the above mentioned safety measures are not taken by the bidder. **If any Man power deployed found without safety equipment's and valid Identity Card, then a fine of Rs. 25,000 (INR Twenty-Five Thousand only) will be deducted from the Vendor/Contractor's monthly payment.**

**25. Labour Laws to be adhered by Successful Bidder:**

LOA to the contractors clearly specify that they shall ensure compliance of Labour Laws and shall indemnify EESL against the liability arising out of any injury to their workers deployed.

Advise the contractors, at various sites, to ensure compliance under the following basic Labour Acts and provisions there under on a priority basis:

- Employees Provident Fund and Miscellaneous Provisions Act, 1952 (providing for PF contributions, Employee pension and Deposit Link Insurance)
- Employees State Insurance Act, 1948 (providing for medical, disablement, dependent benefits)
- Employees Compensation Act, 1923 (providing for Compensation against injury due to and during the course of employment)
- Minimum wages Act, 1948 (providing for minimum wages for various employments)

Further, other social security provisions have also to be complied with.

**Note:** The norms and measures mentioned are indicative and any other law/safety norms related to safety of the labour may also be adhered to.

**26. Period of Validity of Bid:**

Bids shall remain valid for a period of 180 days after the closing date prescribed by the EESL for the receipt of bids. A bid valid for a shorter period may be rejected by the EESL as being non-responsive. In exceptional circumstances, the EESL may solicit the bidder's consent to an extension of the bid validity period. The request and response thereto shall be made in writing thro' letters/ e-mails. If the bidder accepts to prolong the period of validity, the bid security/EMD shall also be suitably extended. A bidder may refuse the request for Bid Validity Extension without forfeiting its bid security. A bidder granting the request will not be required nor permitted to modify its bid.

**27. Bid Price**

Quoted price shall remain firm till the execution of the Contract

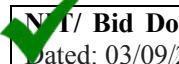
**28. Pre-Bid Conference**

- The official representative of the Bidders may attend the pre-bid conference. The schedule of the meeting shall be as mentioned in Section-1.
- The purpose of the meeting will be to clarify any issues regarding the bid process.
- Record notes of the meeting including the text of the questions raised and responses given will be transmitted to all the bidders who were present at the meeting and will also be put on the web-site. The clarifications that could not be furnished during pre-bid conference will be separately communicated to all the purchasers of the RFP.
- Non-attendance at the pre-bid meeting will not be a cause for rejection of a Bidder.

- Based on the discussion in pre bid meeting, EESL reserved the right for modification in RFP.
- Bidder(s) are requested to send the queries 2 days in advance from the date of pre bid to the contact points mentioned in Section 1 in the following format (**excel or word editable file**):

<b>Name of Tender</b>				
<b>Tender No.</b>				
<b>Tender ID</b>				
<b>Bid Opening Date</b>				
<b>Bidder's Name</b>				
<b>Contact person from Bidder with address, e-mail and Contact No.</b>				
Sr. No.	Section No.	Description as Per RFP	Queries/ Clarification of the bidder	Remarks
	Page No.			
1.	Para No/ Clause No.			
	Section No.			
	Page No.			
2.	Para No/ Clause No.			
	Section No.			
	Page No.			
3.	Para No/ Clause No.			
	Section No.			
	Page No.			

Signature :-  
 Subject : CN=PRASHANT KUMAR, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN  
 MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
 User ID : p.kumar  
 Serial No. 11014AS



**PRICE BID FORMAT**

*Price Bid is to be filled Online Only. This format is for illustration purpose only*

NIT/Bid Document No.: : EESL/06/2020-21/RAISE/Open Tender/202109014

Dated: 03/09/2020

Name of Work: Design, Manufacture, Supply, Erection, Testing and Commissioning of Improved Air Ventilation & Filtration system along with monitoring system on PAN India basis under Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency (RAISE) programme

1. Cluster – 1 (Delhi NCR/UP/Madhya Pradesh/ Chhattisgarh/Uttar Pradesh/ Bihar/ Jharkhand/ Rajasthan/ Punjab/ Haryana/ Rajasthan/ Gujarat)

**SCHEDULE-1 (MANDATORY TO BID IN CASE OF BIDDING FOR CLUSTER-1)**

S. No	Description	Unit of Measureme nt (UOM)	Proposed Quantity	Base Price Per Unit Exclusive of GST (IGST/ CGST/SGST/UGST) on FOR Destination Basis (In Rs.)	Total exclusive of GST(IGST/CG ST/SGST/UGS T) on FOR Destination basis (In Figures)	Total exclusive of GST(IGST/C GST/SGST/U GST) on FOR Destination basis (In Words )
	1	2	3	4	5=3x4	6
<b>A</b>	<b>Filtration System</b>					
A 1	Design, Testing, Supply onsite of Centralized Filtration System (along with 1 <sup>st</sup> year CAMC)	CFM	2500000			
A2	Installation of Centralized Filtration System	CFM	2500000			
A 3	CAMC for Centralized Filtration System for 2 <sup>nd</sup> year	CFM	2500000			
A 4	CAMC for Centralized Filtration System for 3 <sup>rd</sup> year	CFM	2500000			
<b>B</b>	<b>Centralized Monitoring System* (1 sq. ft: 2.3 CFM only for price bid (Not related to site)</b>					

NIT/ Bid Document No.: EESL/06/2020-21/RAISE/Open Tender/202109014

Dated: 03/09/2020

Subject: CENTRALIZED MONITORING SYSTEM, DELHI, Old 25427-110093, DU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No - 110145

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B 1	Design, Testing, Supply Onsite of Centralized Monitoring System (along with 1 <sup>st</sup> year CAMC)	CFM	2500000			
B 2	Installation of Centralized Monitoring System	CFM	2500000			
B3	CAMC for Centralized Monitoring System for 2 <sup>nd</sup> year	CFM	2500000			
B 4	CAMC for Centralized Monitoring System for 3 <sup>rd</sup> year	CFM	2500000			
<b>C</b>	<b>Ventilation (Treated Fresh Air Unit)</b>					
C 1	Design, Testing, Supply onsite of treated fresh air unit (TFA) with provision of filtration & cooling coil system ( incl. of first year CAMC)	CFM	2500000			
C 2	Installation of treated fresh air unit with provision of filtration & cooling coil system	CFM	2500000			
C 3	CAMC for Treated Fresh Air unit with provision of filtration & cooling coil unit for 2 <sup>nd</sup> year	CFM	2500000			
C 4	CAMC for Treated Fresh Air unit with provision of filtration & cooling coil unit for 3 <sup>rd</sup> year	CFM	2500000			
<b>D</b>	<b>Filtration System in TFA/AHU</b>					
D 1	Design, Testing, Supply of filtration unit in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	2500000			
D 2	Installation of filtration unit in TFA	CFM	2500000			
D 3	Comprehensive Annual Maintenance Charge for filtration unit in TFA for 2 <sup>nd</sup> year	CFM	2500000			
D 4	Comprehensive Annual Maintenance Charge for filtration unit in TFA for 3 <sup>rd</sup> year	CFM	2500000			
<b>E</b>	<b>Cooling Coil System in TFA/AHU</b>					
E 1	Design, Testing, Supply of cooling coil system in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	2500000			
E 2	Installation of cooling coil system in TFA	CFM	2500000			
E3	Comprehensive Annual Maintenance Charge for	CFM	2500000			



	cooling coil system in TFA for 2 <sup>nd</sup> year					
E4	Comprehensive Annual Maintenance Charge for cooling coil system in TFA for 3 <sup>rd</sup> year	CFM	2500000			
<b>Grand Total (A+B+C+D+E)</b>						

**SCHEDULE-2 (MANDATORY TO BID IN CASE OF BIDDING FOR CLUSTER-1 BUT NOT PART OF FINANCIAL EVALUATION)**

S. No	Description	Unit of Measurement (UOM)	Proposed Quantity	Base Price Per Unit Exclusive of GST (IGST/CGST/SGST/UGST) on FOR Destination Basis (In Rs.)	Total exclusive of GST(IGST/CGS T/SGST/UGST) on FOR Destination basis (In Figures)	Total exclusive of GST(IGST/CG ST/SGST/UGS T) on FOR Destination basis (In Words )
	1	2	3	4	5=3x4	6
F	<b>HRU Reheat Section: (Sensible Wheel) (Plate Type Heat Exchanger)</b>					
F 1	Design, Testing, Supply of HRU Reheat (Sensible Wheel) complete system in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	200000			
F 2	Installation of HRU Reheat Section: (Sensible Wheel) in TFA	CFM	200000			
F 3	Comprehensive Annual Maintenance Charge for HRU Reheat Section: (Sensible Wheel) in TFA for 2 <sup>nd</sup> year	CFM	200000			
F 4	Comprehensive Annual Maintenance Charge for HRU Reheat Section: (Sensible Wheel) in TFA for 3 <sup>rd</sup> year	CFM	200000			
G.	<b>HRU: (Enthalpy Wheel)</b>					
G 1	Design, Testing, Supply of HRU: (Enthalpy	CFM	200000			



	Wheel) in TFA (along with 1 <sup>st</sup> year CAMC)					
G 2	Installation of HRU: (Enthalpy Wheel) in TFA	CFM	200000			
G 3	CAMC for HRU: (Enthalpy Wheel) in TFA for 2 <sup>nd</sup> year	CFM	200000			
G 4	CAMC for HRU: (Enthalpy Wheel) in TFA for 3 <sup>rd</sup> year	CFM	200000			
H.	<b>HRU: Desiccant Based System</b>					
H.1	Design, Testing, Supply of HRU: (Desiccant Based) in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	200000			
H.2	Installation of HRU: (Desiccant Based) in TFA	CFM	200000			
H.3	CAMC for HRU: (Desiccant Based) in TFA for 2 <sup>nd</sup> year	CFM	200000			
H.4	CAMC for HRU: (Desiccant Based) in TFA for 3 <sup>rd</sup> year	CFM	200000			
I	<b>TFA/HRU: Outdoor Condensing System for DX circuit</b>					
I.1	Design, Testing, Supply of TFA/HWU: Outdoor Condensing Unit for DX circuit in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	200000			
I.2	Installation of TFA/HWU: Outdoor Condensing Unit for DX circuit in TFA /AHU	CFM	200000			
I.3	CAMC for TFA/HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU for 2 <sup>nd</sup> year	CFM	200000			
I.4	CAMC for TFA/HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU for 3 <sup>rd</sup> year	CFM	200000			





J	Air Quality Monitors(Display Unit)					
J.1	Design, Testing, Supply of 40" LED monitor along with accessories (along with 1 <sup>st</sup> year CAMC)	No.	100			
J.2	Installation of 40" LED monitor along with accessories	No.	100			
J.3	CAMC for 40" LED monitor along with accessories for 2 <sup>nd</sup> year	No.	100			
J.4	CAMC for 40" LED monitor along with accessories for 3 <sup>rd</sup> year	No.	100			
K	<b>VFD along with accessories</b>					
K.1	Design, Testing, Supply of VFD along with accessories(along with 1 <sup>st</sup> year CAMC)	CFM	200000			
K.2	Installation of VFD along with accessories	CFM	200000			
K.3	CAMC for VFD along with accessoriesfor 2 <sup>nd</sup> year	CFM	200000			
K.4	CAMC for VFD along with accessories for 3 <sup>rd</sup> year	CFM	200000			
<b>Grand Total (F+G+H+I+J+K)</b>						

**2. Cluster – 2 (Maharashtra/ Karnataka/ Telangana/ Odisha/ Andhra Pradesh/ Tamil Nadu/ Kerala/ NE regions/West Bengal)**

**SCHEDULE-1 (MANDATORY TO BID IN CASE OF BIDDING FOR CLUSTER-2)**

S. No	Description	Unit of Measurement (UOM)	Proposed Quantity	Base Price Per Unit Exclusive of GST (IGST/ CGST/SGST/UGST) on FOR Destination Basis (In Rs.)	Total exclusive of GST(IGST/CGST/SGST/UGST) on FOR Destination basis (In	Total exclusive of GST(IGST/CGST/SGST/UGST) on FOR Destination basis (In Words )

NIT/ Bid Document No. EESI/06/2020-21/RAISE/Open Tender/202109014

Dated: 03/09/2020

Subject: CONTRACTOR SUPPLY, ST- DELHI, OID:23427-110093, DU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No - 1101445

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					<b>Figures)</b>	
	1	2	3	4	5=3x4	6
<b>A</b>	<b>Filtration System</b>					
A 1	Design, Testing, Supply onsite of Centralized Filtration System (along with 1 <sup>st</sup> year CAMC)	CFM	1200000			
A2	Installation of Centralized Filtration System	CFM	1200000			
A 3	CAMC for Centralized Filtration System for 2 <sup>nd</sup> year	CFM	1200000			
A 4	CAMC for Centralized Filtration System for 3 <sup>rd</sup> year	CFM	1200000			
<b>B</b>	<b>Centralized Monitoring System* (1 sq. ft. 2.3 CFM only for price bid (Not related to site)</b>					
B 1	Design, Testing, Supply Onsite of Centralized Monitoring System (along with 1 <sup>st</sup> year CAMC)	CFM	1200000			
B 2	Installation of Centralized Monitoring System	CFM	1200000			
B3	CAMC for Centralized Monitoring System for 2 <sup>nd</sup> year	CFM	1200000			
B 4	CAMC for Centralized Monitoring System for 3 <sup>rd</sup> year	CFM	1200000			
<b>C</b>	<b>Ventilation (Treated Fresh Air Unit)</b>					
C 1	Design, Testing, Supply onsite of treated fresh air unit (TFA) with provision of filtration & cooling coil system ( incl. of first year CAMC)	CFM	1200000			
C 2	Installation of treated fresh air unit with provision of filtration & cooling coil system	CFM	1200000			
C 3	CAMC for Treated Fresh Air unit with provision of filtration & cooling coil unit for 2 <sup>nd</sup> year	CFM	1200000			
C 4	CAMC for Treated Fresh Air unit with provision of filtration & cooling coil unit for 3 <sup>rd</sup> year	CFM	1200000			



D	<b>Filtration System in TFA/AHU</b>					
D 1	Design, Testing, Supply of filtration unit in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	1200000			
D 2	Installation of filtration unit in TFA	CFM	1200000			
D 3	Comprehensive Annual Maintenance Charge for filtration unit in TFA for 2 <sup>nd</sup> year	CFM	1200000			
D 4	Comprehensive Annual Maintenance Charge for filtration unit in TFA for 3 <sup>rd</sup> year	CFM	1200000			
E	<b>Cooling Coil System in TFA/AHU</b>					
E 1	Design, Testing, Supply of cooling coil system in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	1200000			
E 2	Installation of cooling coil system in TFA	CFM	1200000			
E3	Comprehensive Annual Maintenance Charge for cooling coil system in TFA for 2 <sup>nd</sup> year	CFM	1200000			
E4	Comprehensive Annual Maintenance Charge for cooling coil system in TFA for 3 <sup>rd</sup> year	CFM	1200000			
<b>Grand Total (A+B+C+D+E)</b>						

**SCHEDULE-2 (MANDATORY TO BID IN CASE OF BIDDING FOR CLUSTER-2 BUT NOT PART OF FINANCIAL EVALUATION)**

S. No	Description	Unit of Measurement (UOM)	Proposed Quantity	Base Price Per Unit Exclusive of GST (IGST/CGST/SGST/UGST) on FOR Destination Basis (In Rs.)	Total exclusive of GST(IGST/CGST/SGST/UGST) on FOR Destination basis (In Figures)	Total exclusive of GST(IGST/CGST/SGST/UGST) on FOR Destination basis (In Words )
F	<b>HRU Reheat Section: (Sensible Wheel) (Plate Type Heat Exchanger)</b>					



F 1	Design, Testing, Supply of HRU Reheat (Sensible Wheel) complete system in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	100000			
F 2	Installation of HRU Reheat Section: (Sensible Wheel) in TFA	CFM	100000			
F 3	Comprehensive Annual Maintenance Charge for HRU Reheat Section: (Sensible Wheel) in TFA for 2 <sup>nd</sup> year	CFM	100000			
F 4	Comprehensive Annual Maintenance Charge for HRU Reheat Section: (Sensible Wheel) in TFA for 3 <sup>rd</sup> year	CFM	100000			
G.	<b>HRU: (Enthalpy Wheel)</b>					
G 1	Design, Testing, Supply of HRU: (Enthalpy Wheel) in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	100000			
G 2	Installation of HRU: (Enthalpy Wheel) in TFA	CFM	100000			
G 3	CAMC for HRU Reheat Section: (Enthalpy Wheel) in TFA for 2 <sup>nd</sup> year	CFM	100000			
G 4	CAMC for HRU Reheat Section: (Enthalpy Wheel) in TFA for 3 <sup>rd</sup> year	CFM	100000			
H.	<b>HRU: Desiccant Based System</b>					
H.1	Design, Testing, Supply of HRU: (Desiccant Based) in TFA (along with 1 <sup>st</sup> year CAMC)	CFM	100000			
H.2	Installation of HRU: (Desiccant Based) in TFA	CFM	100000			
H.3	CAMC for HRU: (Desiccant Based) in TFA for 2 <sup>nd</sup> year	CFM	100000			
H.4	CAMC for HRU: (Desiccant Based) in TFA for 3 <sup>rd</sup> year	CFM	100000			
I	<b>HWU: Outdoor Condensing System for DX circuit</b>					
I.1	Design, Testing, Supply of HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU	CFM	100000			



	(along with 1 <sup>st</sup> year CAMC)					
I.2	Installation of HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU	CFM	100000			
I.3	CAMC for HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU for 2 <sup>nd</sup> year	CFM	100000			
I.4	CAMC for HWU: Outdoor Condensing Unit for DX circuit in TFA/AHU for 3 <sup>rd</sup> year	CFM	100000			
J	<b>Air Quality Monitors(Display Unit)</b>					
J.1	Design, Testing, Supply of 40" LED monitor along with accessories (along with 1 <sup>st</sup> year CAMC)	No.	100			
J.2	Installation of 40" LED monitor along with accessories	Rs. /No.	100			
J.3	CAMC for 40" LED monitor along with accessories for 2 <sup>nd</sup> year	No.	100			
J.4	CAMC for 40" LED monitor along with accessories for 3 <sup>rd</sup> year	No.	100			
K	<b>VFD along with accessories</b>					
K.1	Design, Testing, Supply of VFD along with accessories (along with 1 <sup>st</sup> year CAMC)	CFM	100000			
K.2	Installation of VFD along with accessories	CFM	100000			
K.3	CAMC for VFD along with accessories for 2 <sup>nd</sup> year	CFM	100000			
K.4	CAMC for VFD along with accessories for 3 <sup>rd</sup> year	CFM	100000			
<b>Grand Total (F+G+H+I+J+K)</b>						

**Note Points for Above Price Bid Tables:**

- Bidder need to quote in each line item for Price-bid (Partial bidding will be rejected)

- In each system:
  - Value of 2<sup>nd</sup> Year AMC  $\geq$  20% more than Value of (Supply + Installation),
  - Value of 3<sup>rd</sup> Year AMC  $\geq$  20% more than Value of Part (Supply Installation)
- In case, bidder quote the value of C or D is less than 20% of Part (Supply Installation), the differential cost will be adjusted from part (A & B), before issuance of LoA.
- In case, bidder quote the value of C or D higher than 20% of Part (Supply Installation), the LoA shall be issued on quoted values only.
- L1 bidder shall be selected based on minimum total cost of (A1+...+A4+B1+.....+B4+C1+....+C4+D1+...+D4+E1+...+E4)
- Additionally, bidder shall quote the value against each system (F-K) and NO extra cost will be paid for the integration in the system (All-inclusive but excl. of GST), Further no extra system of the previously installed system by EESL shall be replaced.
- Ceiling Limit for budgetary quotes against each system.

F. TFA/HRU: Sensible Wheel (Plate Type Heat Exchanger)	Unit Value of System $F \leq 1.75 * \text{Unit Value of System (C+D+E)}$
G. TFA/HRU: Enthalpy Wheel	Unit Value of System $G < 1.5 * \text{Unit Value of System (C+D+E)}$
H. TFA/HRU: Desiccant System	Unit Value of System $H \leq 1.5 * \text{Unit Value of System (C+D+E)}$
I. TFA/HRU: Outdoor Condensing System (DX	Unit Value of System $I \leq 2.5 \times \text{Unit Value of System (C+D+E)}$
K. VFD along with accessories	Unit Value of System $K \leq 0.06 \times \text{Unit Value of System (C+D+E)}$

- In case, bidder quote the value of F to K higher than the ceiling limit, the cost will be reduced upto ceiling limit, before issuance of LoA.
- In case, bidder quote the value of F to K lower than the ceiling limit, the LoA shall be issued on quoted values only.
- Quoted Values against Row J (Air Quality Monitors) may also be considered for reduction if less number of the LCD monitors are installed (as per the scope of work)

#### **Other terms and conditions**

1. The Bidder shall indicate in the Price Bid, the unit prices in Rs.(INR) and total Bid prices of the Goods & Services in the prescribed format only. Bidders shall quote for the complete requirement of Goods and Services specified under the Contract on a single responsibility basis, failing which such Bids will not be taken into account for evaluation and will not be considered for award.
2. The bidder should compulsorily quote for all heads in the participating Cluster as mentioned in the price-bid format for which separate analysis/ reasonable estimation of all heads should be done by the bidder before quoting the rates in the financial bid. Any contravention may lead to rejection of offer submitted.





3. Any other item as required for commissioning the system for reliable and efficient operation to be provided within the quoted price.
4. Successful bidder should mandatorily register itself under GST act in respective state, where the goods/services will be rendered.
5. Prices will remain firm till the execution of the contract.
6. The bidder shall quote the price on FOR Destination basis.
7. In case of difference in figures and words, price mentioned in words shall prevail.

I/We have read all the terms and conditions of the RFP/IFB/NIT and the Annexure(s) thereto and agree to accept and abide by the same in toto. The above quotation has been prepared after taking into account all the terms and conditions of the RFP/IFB/NIT.

Dated:

(SEAL)

Signature of Tenderer or

Their Authorized Representative: \_\_\_\_\_

Name & Address of Tenderer:

\_\_\_\_\_

Phone No: \_\_\_\_\_

Fax no.: \_\_\_\_\_

E-Mail: \_\_\_\_\_

**NIT/ Bid Document No.** EESL/06/2020-21/RAISE/Open Tender/202109014

Dated: 03/09/2020

Project: CR-TRANSIT RUMAK, ST-DELHI, OIG:2:5:4:17=110003, DU=SUPPLY CHAIN  
MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN  
User ID : p.kumar  
Serial No - 110145

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(Technical & SCC)

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<b>SPECIFIC CONFIRMATION BY BIDDER</b>	
<b>Note: Please submit the table below duly filled, signed and stamped along with Techno-Commercial Bid on your Letter Head.</b>	
Description	Remarks
In case more than one bidder gets qualified based on the Techno-commercial Bid, then the bidder quoting the lowest total price including warranty cost and all other costs defined in price-bid table will qualify as the successful bidder.	Agreed.
Bidders should have financial and technical capabilities to execute the Scope of Work as specified in the RFP.	Vendor to give their acceptance along with supporting documents
Payment Terms—as per SCC Clause No. 1.0.	Agreed.
Test Reports as per respective clause	Agreed.
For the purpose of this Tender, the successful bidder needs to provide name, address, mobile no., email addresses, designations of at least 3 Senior Nodal Officers (Regular Employees of their organization), nominated by their top management, who are reachable through any means of modern communication and who shall be accountable to deliver the product and associated services to EESL as per the tender.	Bidder to provide information on letterhead pad
Any entity which has been barred by the Central/State Government or PSUs, from participating in any bid, and the bar subsists as on the Bid Due date, would not be eligible to submit a Bid. Necessary declaration to this effect has to be given by the bidder as per format in the tender form.	Bidder to give a declaration on its letterhead pad.
EESL reserves the right for quantity variation up to +/- 20%. Further EESL reserves the right to place a repeat order in case of urgency for part quantity in the Letter of Award for similar work on same prices, terms and conditions. Also, EESL reserves the right to ask the successful bidder to deliver the part quantity placed on them anywhere in territory of India on same prices, terms and conditions. Furthermore, in case of unavailability of business, poor performance etc., EESL reserves the right to short-close LoA, without any type of obligations to bidder.	Agreed.
It will be the sole discretion of EESL to award the quantity irrespective of the quantity mentioned by the bidder	Agreed.
Undertaking by authorized signatory that all Central/State duties, cess, etc. shall be complied with by the supplier.	Undertaking to be provided. To be provided on company Letterhead

**Note:**

All the required documents must be properly annexed and submitted with the confirmation as mentioned above.

<b>BILL OF MATERIAL FOR AIR FILTRATION SYSTEM, RAISE PROGRAM</b>	
<b>Sl. No.</b>	<b>Description</b>
<b>1.0</b>	<b>Filtration Units for TFA/ FA Unit</b>
	Supply, installation, testing & commissioning of central fresh air hybrid filtration system complete, high efficient Active Carbon/chemical filter & Pre-filter with combined high filtration efficiency to improve the supply fresh air quality through reducing harmful pollutants mainly external load like particulate matter (PMx), PM 1/2.5/10, allergens, smoke, pollution etc within the acceptable limit as specified in the tender specifications. The unit shall be supplied complete with Pre-filter, Media (may be electronic/mechanical or any other equivalent technology) filter and high efficient activated carbon filter that all together eliminate harmful gases, particulate matters & TVOC etc up to acceptable limit in outdoor air supply before supplying to the indoor space or recirculation AHU and meet the specifications given in the tender. It should be a monobloc structured unit specifically designed for integration in Air suction path of the TFA/ FA Unit, to centrally capture and kill pollutants and germs. The multistage filter should be enclosed inside powder coated extruded aluminium casing/ Galvanized steel cabinet and should be self contained. It should have a low initial pressure drop @ 2.5 m/s air velocity. The Ozone concentration limit should not exceed to 0.05 ppm as per UL 867. The unit should have an indication/alarm system to indicate when get choked or need any maintenance. Also the safety button for ESP is required when operating in high voltage for anyone who opens the ahu or is the current leaks.
	The Complete Air Cleaner unit should be UL listed with in built provision to BMS compatibility. The central air cleaner units must have a valid ANSI/ASHRAE 52.2 test report to verify filtration efficiency and an ISO16890 compliance. The unit must have factory test report to ensure that it meets the following safety and environmental criteria with reference to UL 867 & CE.
<b>2.0</b>	<b>Filtration Units for Re circulating AHUs</b>
	Supply, installation, testing & commissioning of central hybrid filtration system for recirculation air complete with UV lamp, high efficient Activated Carbon/ Chemical filter & Pre-filter with combined high filtration efficiency to improve the indoor air quality through reducing harmful pollutants like particulate matter (PMx), PM 1/2.5/10, allergens, pollen, smoke, bacteria, pathogens & TVOC etc within the acceptable limit as specified in the tender specifications. The unit shall be supplied complete with pre-filter, media (may be electronic/mechanical or any other equivalent technology) filter, activated carbon/chemical filter and UV-C light that together eliminate harmful gases, TVOC and airborne like microbes, including bacteria, fungi, viruses, Molds & other Bio-Contaminants etc in air & surface treatment and meet the acceptable limit. The system shall be designed for providing protection from airborne infection and maintaining Indoor Air Quality. It should be a monobloc structured unit specifically designed for integration in Air suction path of the AHU Unit, to centrally capture and kill pollutants and germs. The multistage filter should be enclosed inside powder coated extruded aluminium casing/ Galvanized steel cabinet and should be self contained. It should have a low initial pressure drop @ 2.5 m/s air velocity. The system Ozone concentration limit should not exceed to 0.05 ppm as per UL 867. The Initial minimum designed UV (Wavelength - 254 nm) cumulative average intensity of 4,000µW/cm <sup>2</sup> or above. The unit should have an indication/alarm system to indicate when get choked or

Signature :-  
 Subject :- RAISE/PRASHANT KUMAR, ST-DELHI, CID 2, E-4-17-110002, CU-SUPPLY CHAIN  
 MANAGEMENT, O-Energy Efficiency/Service Unit/RAISE  
 Serial No. :- 11D1445

**NIT/ Bid Document No.:** EESL/06/2020-21/RAISE/Open Tender/202109014

Date: 03/09/2020

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(Technical & SCC)

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	need any maintenance. Also the safety button for ESP is required when operating in high voltage for anyone who opens the ahu or is the current leaks.
	The Complete Air Cleaner unit should be UL listed with in built provision to BMS compatibility. The central air cleaner units must have a valid ANSI/ASHRAE 52.2 test report to verify filtration efficiency and an ISO16890 compliance. The unit must have factory test report to ensure that it meets the following safety and environmental criteria with reference to UL 867 & CE.
	<b>Total</b>

<b>BILL OF MATERIAL FOR IAQ MONITORING SYSTEM, RAISE PROGRAM</b>	
<b>Sl. No.</b>	<b>Description</b>
	<b>Indoor Air Quality Monitoring System</b>
<b>A</b>	<b>(Complete with Monitor/Display, DDC Controller, Field devices/Sensors &amp; Wiring)</b>
<b>1.0</b>	<b>Display Unit</b>
	Supply, installation, testing & commissioning of coloured TFT ,touch screen display to monitor all the field perimeters. WiFi enabled Display shall have android / OS. Display shall be DIN- mounted. Display shall have USB 2.0 port to communicate with master controller or gateway.
<b>2.0</b>	<b>Controller</b>
	Supply, installation, testing & commissioning of programmable IP20, HVAC controller with required software for programming and configuration supporting complex HVAC control algorithms with suitable powder coated MS enclosure of indoor application for wall mounting & control transformer & Power supply. The controller shall have minimum 8 AI on board and expandable, 2nos. Universal I/Os, 2 nos port for integration integration on open protocol (ethernet/ Modbus RS485) with necessary control protection & accessories as per technical specifications. Apart from the controllers, the enclosers shall house the terminal blocks and associated equipment. The internal wiring in the enclosure shall be factory wired. The packaging shall be such that complete installation of the field equipment and field wiring can be done prior to the installation of the electronics.
	Controller shall communicate in Star, Daisy chain, RSTP topology & offer path redundancy for communication& DHCP enabled to ensure VPN network . The controller shall be independent in operation in case of failure. The controllers shall have the facility to implement user modifiable time schedules as daily, weekly, monthly annual temporary schedules.
	ABS plastic (recycled & environment friendly) housing material, Din rail/ wall mounting, approx 32MB RAM, approx 32MB flash, approx 2MB boot flash memory, 1,00,000 hours (approx. 11 years) MTBF, 0-50 degree C operating temperature, -20 to +50 degree C storage temperature, 93% RH (ambient). Controller shall have redundant communication port feature allowing for secondary communication and shall be certified with CE, BTL latest revision, UL 916, FCC
<b>3.0</b>	<b>Field Devices or Sensors</b>



Signature :- PRASHANT KUMAR, ST - DELHI, OJD 2.5.4.17-110003, OJ - SUPPLY CHAIN  
 Subject :- RAISE PROGRAM  
 MANAGEMENT, O - ENERGY EFFICIENCY SERVICES UNIT  
 Serial No. :- 11D1445

**NIT/ Bid Document No.:** EESL/06/2020-21/RAISE/Open Tender/202109014  
 Dated: 03/09/2020

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 (Technical & SCC)

	Supply, installation, testing & commissioning of field devices or sensors for measuring the IAQ & Temperature conditions are as follow as per the technical specifications
a)	Outdoor Temperature & Humidity sensor
b)	Indoor Temperature & Humidity sensor (Wall/ Ceiling Mounted)
c)	Indoor Temperature & Humidity sensor (Duct Mounted)
d)	IAQ combo sensor (CO2, TVOC, PM2.5, PM10, Temp. & RH etc)
e)	IAQ sensor (Ozone & Formaldehyde etc)
f)	Velocity sensor
g)	Differential Pressure sensor
	<b>Note:-</b> Other than above specified sensors, modbus output sensors are optional
<b>4.0</b>	Communication cable
<b>4.1</b>	Supply, installing, testing and commissioning of Communication Cabling 2C x 1.5 sqmm in 25 mm FRLS medium duty PVC Conduits , UV Stabilized
<b>4.2</b>	Supply, installing, testing and commissioning of Communication Cabling 2C x 1.0 sqmm shielded cable in 25 mm FRLS medium duty PVC Conduits, UV Stabilized
<b>5.0</b>	CAT 6 A unarmoured cables with required accessories like RJ45 connector etc.
	<b>TOTAL</b>

### BILL OF MATERIAL FOR DEMAND CONTROL VENTILATION SYSTEM, RAISE PROGRAM

Sl. No.	Description
<b>A</b>	<b>Equipments</b>
<b>1.0</b>	<b>Packaged system / VRF/VRV Compatible Treated Fresh Air Unit with DX/chilled water Coil</b>
<b>1.1</b>	Supply, Installing, testing and commissioning of Factory built ceiling suspended Fresh Air indoor and outdoor Units, Double skin type complete with AMCA certified SISW backward curved high efficiency plug fan with High efficiency EC motor with potentiometer suitable for 415 ± 10% volts, 50Hz, 3 Phase AC supply including necessary controls, fan capacity shall be based on outlet velocity not exceeding 2000 FPM, coil section with DX coil, necessary refrigerant charge and AHU VRF/VRV kit suitable for connectivity with outdoor condensing unit through piping for satisfactory operation, velocity across coil at 500 FPM, filter section (type of filtration as per selection from air purification section), limit switch, glass window, drive system, supply air duct connection, 40 mm thick panels consisting of GI casing of thickness 0.8mm outside & inside layer with factory injected PUF (density-38 kg/m3) between them etc. conforming to specifications. The actual capacity of TFA units shall be as follows. Max. noise level shall be 60 db at 1 meter and as per specifications. The unit shall be installed using hangers with spring type isolators to avoid transfer of vibration to the building. The unit shall be provided with potentiometer. The unit shall be provided with module for remote operation connectivity having the Auto/ manual selection system. Unit compatible to be operated from remote command and

Signature :-  
Signature :- PRAKASH KUMAR, IT, DELHI, CID-3, E-4, 17, 310002, CIVIL SUPPLY CHAIN  
MANAGEMENT, O-ENERGY EFFICIENCY SERVICES UNIT, IIT  
Serial No.: 11D1445

	speed modulation based on CO2 sensor input through controller & pressure sensor in Auto mode and through potentiometer in manual mode. All the internal power & control wiring shall be factory provided.
	FA unit shall capable to deliver minimum @10% air flow of it full capacity without failure or any operational/performance issue. Also the unit shall be selected with two blower and design the control scheme which allow single blower operation whenever required.
	Package/VRV System shall be based on latest technology variable refrigerant temperature equipped with free phase technology, auto refrigerant charge function complete with indoor and outdoor unit with individual controller and with fittings, green refrigerant, meeting BEE 5star ratings or meeting latest ASHRAE 90.1 etc. It should be suitable for heat pump by inverter driven capacity control compressors complete with necessary refrigerant charge, air cooled condenser with propeller fan, controls, control panel, starter, Power cabling, earthing, MS Channel Frame, vibration isolators.
	Air Flow capacities are as follows and TSP shall be enough to cater the total system pressure drop considering filtration system & ducting
	<b>Note:-</b> In normal operation FA unit shall deliver the outdoor air as per the input receive from CO2 sensor based on the space fresh air demand. During the favourable ambient months when ambient temperature decreases below 20 °C the FA unit shall work as an economiser or energy saving mode and based on the input receive from ambient temperature sensor unit shall start running at its full speed to deliver 100% air flow capacity to the conditioned space.
	<b>AHU Make:-</b> Edgtech/ System air/ VTS/ Zeco
	<b>EC Plug Fan Make:-</b> Ziehl Abegg/ EBM Papst
	<b>Packaged AC/ VRF/VRV Make:-</b> Mitsubishi/ Daikin/ Hitachi/ Carrier/ Voltas/ Bluestar
<b>1.3</b>	<b>Refrigerant Pipe between Outdoor Unit and DX TFA Unit</b>
	Supply, installation, testing and commissioning of 19 mm thick class "O" XLPE insulation covered with interwoven glass fabric for UV and mechanical protection insulated liquid and suction copper refrigerant piping with necessary refrigerant charge of following sizes along with necessary fittings to inter connect the condensing unit and the evaporating unit.
<b>2.0</b>	<b>Heat Recovery Unit</b>

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 Subject :- ENERGY EFFICIENCY SERVICES LIMITED  
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	Supply, Installing, testing and commissioning of Factory built floor mounted Heat recovery unit complete with a two tier, two air stream arrangement. Filter section with HDPE washable MERV-8 pre filter with filtration efficiency of 90% for 10 micron particle size on fresh air suction, Drive system for heat recovery wheel with low rpm, 40 mm thick panels consisting of GI casing of thickness 0.8mm outside & inside layer with factory injected PUF (density-38 kg/m3) between them etc. conforming to specifications. The unit shall be provided with module for remote operation connectivity having the Auto/ manual selection system. Unit compatible to be operated from remote command in Auto mode. The Heat recovery wheel having 275 mm thick having minimum 75% sensible & latent energy recovery efficiency and having low pressure drop across the wheel conforming to the technical specification
	Fresh air discharge after heat recovery shall be connected with the TFA/AHU suction and building exhaust (toilet/pantry exhaust) shall be connected to the exhaust section of heat recovery unit.
	Types of Heat Recovery Wheels of 500 cfm to 5000 cfm capacity each
a)	Sensible heat recovery wheel
b)	Enthalpy wheel
<b>3.0</b>	<b>Ceiling Suspended Fresh Air Unit</b>
	Supply, Installing, testing and commissioning of Factory built ceiling suspended Fresh Air Units, Double skin type complete with AMCA certified SISW backward curved high efficiency plug fan with High efficiency EC motor with potentiometer suitable for 415 ± 10% volts, 50Hz, 3 Phase AC supply including necessary controls, fan capacity shall be based on outlet velocity not exceeding 2000 FPM, filter section, limit switch, glass window, drive system, supply air duct connection, 40 mm thick panels consisting of GI casing of thickness 0.8mm outside & inside layer with factory injected PUF (density-38 kg/m3) between them etc. conforming to specifications. The actual capacity of air handling units shall be as follows. Max. noise level shall be 60 db at 1 meter and as per specifications. The unit shall be installed using hangers with spring type isolators to avoid transfer of vibration to the building. The unit shall be provided with potentiometer. The unit shall be provided with module for remote operation connectivity having the Auto/ manual selection system. Unit compatible to be operated from remote command and speed modulation based on CO2 sensor input through controller & pressure sensor in Auto mode and through potentiometer in manual mode.
	FA unit shall capable to deliver minimum @10% air flow of it full capacity without failure or any operational/performance issue. Also the unit shall be selected with two blower and design the control scheme which allow single blower operation whenever required.
	Air Flow Capacity are as follows and TSP shall be enough to cater the total system pressure drop considering filtration system & ducting
	<b>Note:-</b> In normal operation FA unit shall deliver the outdoor air as per the input receive from CO2 sensor based on the space fresh air demand. During the favourable ambient months like oct/nov when ambient temperature decreases below 20 °C the FA unit shall work as an economiser or energy saving mode and based on the input receive from ambient temperature sensor unit shall start running at its full speed to deliver 100% air flow capacity to the conditioned space.
	<b>AHU Make:-</b> Edgtech/ System air/ VTS/ Zeco
	<b>Filter Make:-</b> Honeywell/ Magneto/ Aerate/ Breathe easy/ Johnson controls
	<b>EC Plug Fan Make:-</b> Ziehl Abegg/ EBM Papst

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<b>2.0</b>	<b>Controller For Demand Control Ventilation System integrated with Motorized actuator &amp; CO2 sensor</b>
	Supply, installation, testing & commissioning of programmable IP20, HVAC controller with required software for programming and configuration supporting complex HVAC control algorithms with suitable powder coated MS enclosure of indoor application for wall mounting & control transformer & Power supply. The controller shall have minimum 8 AI & 6 AO on board and expandable, 2nos. Universal I/Os, integration on open protocol (ethernet/ Modbus RS485) with necessary control protection & accessories as per technical specifications. Apart from the controllers, the enclosures shall house the terminal blocks, load relays and associated equipment. The internal wiring in the enclosure shall be factory wired. The packaging shall be such that complete installation of the field equipment and field wiring can be done prior to the installation of the electronics.
	Controller shall communicate in Star, Daisy chain, RSTP topology & offer path redundancy for communication & DHCP enabled to ensure VPN network. The controller shall be independent in operation in case of failure. The controllers shall have the facility to implement user modifiable time schedules as daily, weekly, monthly annual temporary schedules.
	ABS plastic (recycled & environment friendly) housing material, Din rail/ wall mounting, 32MB RAM, 32MB flash, 2MB boot flash memory, 1,00,000 hours (approx. 11 years) MTBF, 0-50 degree C operating temperature, -20 to +50 degree C storage temperature, 93% RH (ambient). Controller shall have redundant communication port feature allowing for secondary communication and shall be certified with CE, BTL latest revision, UL 916, FCC
	<b>Make:-</b> Schneider/ Honeywell/ Trane
	<b>Note:-</b> Single controller shall receive input from CO2 sensors from three locations & generate three independent output to modulate the motorized fresh air dampers for the respective zone AHU
<b>3.0</b>	<b>Differential Pressure Sensor- Duct Mounted</b>
	Supply, installing, testing and commissioning of duct mounted differential pressure sensors across the motorized damper in supply air for measuring the duct pressure and shall be integrated with AHU EC motor for speed control.
	<b>Make:-</b> Schneider/ Honeywell/ Trane
<b>4.0</b>	<b>Velocity Sensor- Duct Mounted</b>
	Supply, installing, testing and commissioning of duct mounted velocity sensors in supply air duct to measure the real time air flow in the duct.
	<b>Make:-</b> Schneider/ Honeywell/ Trane
<b>5.0</b>	<b>Temperature Sensor for Ambient</b>
	Supply, installing, testing and commissioning of Ambient Temperature Sensor. Measuring Range: Temp:-40 to 100 Deg C with Accuracy: $\pm 0.2$ Deg C (UL Listed Housing for Outdoor Mounting).
	<b>Make:-</b> Schneider/ Honeywell/ Trane
<b>6.0</b>	<b>Temperature Sensor for Indoor</b>
	Supply, installing, testing and commissioning of Ambient Temperature Sensor. Measuring Range: Temp:-40 to 100 Deg C with Accuracy: $\pm 0.2$ Deg C
	<b>Make:-</b> Schneider/ Honeywell/ Trane
<b>7.0</b>	<b>CO2 Sensor</b>

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	Supply, installing, testing and commissioning of CO2 Sensor wall/ ceiling mounted. Measuring Range: Temp:-40 to 100 Deg C with Accuracy: ±3% or 50ppm.
	<b>Make:-</b> Schneider/ Honeywell/ Trane
<b>8.0</b>	<b>Communication Cable</b>
	Supply, installing, testing and commissioning of Communication Cabling 2C x 1.5 sqmm between CO2 sensor to controller & motorized damper units in 25 mm FRLS PVC Conduits , UV Stabilized
	<b>Make:-</b> KEI/ RR Kabel/ Finolex
<b>9.0</b>	CAT 6 A unarmoured cables with required accessories like RJ45 connector etc.
<b>10.0</b>	<b>Canvas Flexible Connections</b>
	Supplying, fabricating, installing and testing of 150mm long silicon based flexible connection with both side flanges constructed of fire resistant material double canvas sleeve as per the drawings/ specifications. Quantity is mentioned considering perimeter length. As per technical specifications with all the necessary mounting accessories as required for complete installation.
	<b>Make:-</b> Resistoflex/ Kanwal (Easyflex)/ Cori
	<b>Sub Total</b>
<b>B</b>	<b>Ducting</b>
<b>1.0</b>	<b>Factory Fabricated Sheet Metal Ducting as per SMACNA Standard</b>
	Supplying, fabricating, installing and testing of factory fabricated 120 GSM galvanizing sheet metal ducts of following thicknesses including necessary supports, flexible hangers with isolators, flexible connections, nut bolts, gasket, splitter dampers and vanes, volume control dampers etc. complete as per specification in accordance with the approved shop drawings and required by the specifications.
	<b>GI Sheet Make:-</b> Sail / TATA / Jindal Hisar
	<b>Factory Fabricated Make:-</b> Rolastar/ Ductofab/ Zeco
<b>2.0</b>	<b>Volume Control Dampers- Manual</b>
	Supplying, installing, and testing of GI volume control damper within ducts to be provided with suitable links, levers and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per approved shop drawings.
	<b>Damper Make:-</b> Systemair/ Ruskin Titus/ Caryaire
<b>3.0</b>	<b>Motorized Volume Control dampers</b>
	Supplying, installing, and testing of Motorized operated GI volume control damper within ducts to be provided with suitable links, levers and quadrants for proportionate controlling of volume of air flow based on the demand control ventilation requirement & input. The damper shall be as per UL listed UL 555; 1995 and CBRI approved. The damper shall be constructed out of 16G galvanised sheet steel
<b>a)</b>	Damper
<b>b)</b>	Actuators
<b>c)</b>	Control Panel, wiring & accessories

	<b>Damper Make:-</b> Systemair/ Ruskin Titus/ Caryaire
	<b>Actuator Make:-</b> Belimo/ Honeywell/ Siemens
<b>4.0</b>	<b>Aluminium Louvers for Fresh Air</b>
	Supplying, installing and testing of Al outlet louvers with bird screen for fresh air complete as per specification & drawings.
	<b>Make:-</b> Systemair/ Ruskin Titus/ Caryaire
	<b>Sub Total</b>
<b>C</b>	<b>Electrical Works</b>
	Design, fabrication, supply, installation, testing and commissioning of LT Panel/Sub-distribution panels fabricated out of 2mm thick for structural members (Load bearing members) and 1.6mm thick for door and covers (Non load bearing members) CRCA sheet in cubicle compartmentalize free standing floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel 'T' irons and / or flats wherever necessary, 16 gauge CRCA sheet steel shall be used for final distribution panels. 3mm thick Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before powder coating of thickness not less than 100 micron as per specifications. 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system and with 20% spare space, lifting hooks shall also be provided in case of large panels. Degree of ingress protection of IP 43 for Indoor and IP-55 for Outdoor.
	Approval shall be taken for each panel before fabrication. Galvanized hardware's with zinc passivation shall be used in fabrication of panels.
	<b>MCCB:</b>
	MCCBs of above and including 200A Microprocessor Based and up to and including 160A thermal Magnetic releases.
	This BOQ to be read in conjunction with technical specifications and Single Line Diagram (attached for reference). If any discrepancy occurs that should be brought to the notice of Client/Consultant before quoting the price otherwise stringent condition will be deemed to have been considered.
	All MCCBs shall be provided with rotary operating handle and ON/OFF lamps.
	All meters shall be digital type (unless otherwise specified)
	Multi-function meter to be provided as required to cover all the parameters as mentioned.
	All current/voltage transformer shall be cast resin type.
	All indicating lamps shall be LED type.

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	Current density for bus bar shall not be more than 0.8A/Sqmm. Rating of Bus bar is after considering all derating factors. (Bus bar sizing calculation to be submitted for approval.)
	All internal control wiring shall be heat resistant type.
	All incoming breakers in Main LT panel shall be electrically interlocked.
	All TP feeders shall be provided with Isolable neutral link.
	Bus bar chamber shall be provided at top only. Incoming and outgoing cable entry shall be from top/bottom as required.
	All feeders shall be provided with door interlocked with door defeat, pad lock facility.
	Live parts shall not be accessible after opening the door, Transparent acrylic sheet to be provided to cover the same.
	Spare contacts of MCBs / MCCBs / Relay / Contactor shall be wired up to terminal block.
	All MCCBs shall be provided with variable O/L & S/C releases. Incoming MCCB shall be provided with E/F releases also
	All incoming/outgoing cables shall be terminated on links/terminals.
	All Switchgear used in Starter Circuit shall be type-2 coordinated. Contactor rating shall be selected as per the kVAR rating of the capacitor bank from capacitor duty contactor range. Vendor to furnish the type-2 coordination chart and capacitor duty contactor selection chart.
	All incoming/outgoing cables shall be terminated on links/terminals.
	All Switchgear used in Starter Circuit shall be type-2 coordinated. Contactor rating shall be selected as per the kVAR rating of the capacitor bank from capacitor duty contactor range. Vendor to furnish the type-2 coordination chart and capacitor duty contactor selection chart.
	Degree of protection for following type of distribution panel enclosure shall be as per IS:13947-1993.
	IP 43 for indoor panels.
	IP 55 for outdoor panels.
	<b>Make:-</b>
	Panel Manufacturer:- Adlec/ Advance/ Tricolite
	MCCB/ MPCB:- Schneider/ Siemens/ ABB
	MCB/ RCCB:- Schneider/ Siemens/ ABB
	MCCB:- Schneider/ Siemens/ ABB
	Indicating Lamps:- Schneider/ Siemens/ ESBE
	Protection relays (Numeric):- ABB/ Schneider/ Siemens

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	CT's:- AE/ Kappa/ Pragati
	Selector Switch/ Toggle switch:- Kaycee/ Salzer (L&T)
	VFD:- Danfoss/ ABB/ Siemens
<b>1.0</b>	<b>Isolator Panel for AHU/ TFA/ FA Unit</b>
<b>1.1</b>	One (1) No. 63 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>22.5 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.2</b>	One (1) No. 63 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>18 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.3</b>	One (1) No. 40 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>15 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.4</b>	One (1) No. 40 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>11.2 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.5</b>	One (1) No. 32 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>9.3 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.6</b>	One (1) No. 32 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>7.5 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.7</b>	One (1) No. 20 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>5.5 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>1.8</b>	One (1) No. 16 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>3.7 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary



	accessories as required for complete installation.
1.6	One (1) No. 10 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>2.2 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
1.7	One (1) No. 610A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>1.5 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
1.8	One (1) No. 6 A 4P Thermal magnetic based (overcurrent + Short-circuit ) release MCB (25kA) with 230 volt, AC operated shunt trip coil with trip contact suitable for <b>1.0 KW</b> motor with ON/OFF/ Trip indication lamps, Digital voltmeter & Digital ammeter with 3 set of CTs of suitable ratings, Auto/Manual selector switch for remote operation, auxiliary relay actuated through fire module with necessary potential free contacts in each feeder with all the necessary accessories as required for complete installation.
<b>2.0</b>	<b>Cabling:</b>
	Supply & laying of following 1100 volt grade XLPE insulated, PVC sheathed, copper conductor armoured cables (Confirming To IS:7098 Part-I) including termination as per specification in existing trenches, cable trays, ducts, over bed of sand, clad to wall with suitable clamp including, saddles fixing bolts, connecting testing and commissioning.
	<b>Make:-</b> KEI/ RR Kabel/ Finolex
<b>3.0</b>	<b>Cable Tray:</b>
	Supply, fabricating and installing following size of perforated M.S. cable trays including support, horizontal and vertical bends, reducers, tees, cross members and other accessories as required, and duly suspended from the ceiling with M.S. suspenders, including painting etc.
	<b>Make:-</b> Aditya/ Indeana/ MEM
<b>4.0</b>	<b>G.I. Earthing Strip:</b>
	Supply, installation, testing and commissioning of following sizes of G.I. strip/wire clamped to walls, cable trays, bus ducts, cables in recess or surface etc for equipment/ System / Lightning protection earthing complete as required including inter connection between length at joints, all fixing accessories saddles, clamps etc. and other fixing hardware material as required for proper installation.
<b>5.0</b>	<b>G.I. Earthing Wire:</b>
	Supply, installation, testing and commissioning of following sizes of G.I. Wire multistrand, Flexible copper conductor PVC insulated FRLS wire conforming to IS694 amended up to date

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<b>6.0</b>	<b>MS Conduit:</b>
	Providing and fixing in position the following 16 gauge MS conduit concealed or exposed as called for including all fittings & accessories.
	<b>Make:-</b> Precision/ D Plast/ BEC
	<b>Sub Total</b>
	<b>GRAND TOTAL</b>

## BILL OF MATERIAL FOR EXISTING AHU RETROFIT, RAISE PROGRAM

Sl. No.	Description
	<b>Retrofit Works for Existing AHU System</b>
	<b>Electrical Works</b>
	Design, fabrication, supply, installation, testing and commissioning of LT Panel/Sub-distribution panels fabricated out of 2mm thick for structural members (Load bearing members) and 1.6mm thick for door and covers (Non load bearing members) CRCA sheet in cubicle compartmentalize free standing floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel 'T' irons and / or flats wherever necessary, 16 gauge CRCA sheet steel shall be used for final distribution panels. 3mm thick Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before powder coating of thickness not less than 100 micron as per specifications. 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system and with 20% spare space, lifting hooks shall also be provided in case of large panels. Degree of ingress protection of IP 43 for Indoor and IP-55 for Outdoor.
	Approval shall be taken for each panel before fabrication. Galvanized hardware's with zinc passivation shall be used in fabrication of panels.
	<b>MCCB:</b>
	MCCBs of above and including 200A Microprocessor Based and up to and including 160A thermal Magnetic releases.
	This BOQ to be read in conjunction with technical specifications and Single Line Diagram (attached for reference). If any discrepancy occurs that should be brought to the notice of Client/Consultant before quoting the price otherwise stringent condition will be deemed to have been considered.
	All MCCBs shall be provided with rotary operating handle and ON/OFF lamps.
	All meters shall be digital type (unless otherwise specified)

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 Subject :- RAISE PROGRAM  
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 Serial No. : 11D1445

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	Multi-function meter to be provided as required to cover all the parameters as mentioned.
	All current/voltage transformer shall be cast resin type.
	All indicating lamps shall be LED type.
	Current density for bus bar shall not be more than 0.8A/Sqmm. Rating of Bus bar is after considering all derating factors. (Bus bar sizing calculation to be submitted for approval.)
	All internal control wiring shall be heat resistant type.
	All incoming breakers in Main LT panel shall be electrically interlocked.
	All TP feeders shall be provided with Isolable neutral link.
	Bus bar chamber shall be provided at top only. Incoming and outgoing cable entry shall be from top/bottom as required.
	All feeders shall be provided with door interlocked with door defeat, pad lock facility.
	Live parts shall not be accessible after opening the door, Transparent acrylic sheet to be provided to cover the same.
	Spare contacts of MCBs / MCCBs / Relay / Contactor shall be wired up to terminal block.
	All MCCBs shall be provided with variable O/L & S/C releases. Incoming MCCB shall be provided with E/F releases also
	All incoming/outgoing cables shall be terminated on links/terminals.
	All Switchgear used in Starter Circuit shall be type-2 coordinated. Contactor rating shall be selected as per the kVAR rating of the capacitor bank from capacitor duty contactor range. Vendor to furnish the type-2 coordination chart and capacitor duty contactor selection chart.
	All incoming/outgoing cables shall be terminated on links/terminals.
	All Switchgear used in Starter Circuit shall be type-2 coordinated. Contactor rating shall be selected as per the kVAR rating of the capacitor bank from capacitor duty contactor range. Vendor to furnish the type-2 coordination chart and capacitor duty contactor selection chart.
	Degree of protection for following type of distribution panel enclosure shall be as per IS:13947-1993.
	IP 43 for indoor panels.
	IP 55 for outdoor panels.

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	<b>Make:-</b>
	Panel Manufacturer:- Adlec/ Advance/ Tricolite
	MCCB/ MPCB:- Schneider/ Siemens/ ABB
	MCB/ RCCB:- Schneider/ Siemens/ ABB
	MCCB:- Schneider/ Siemens/ ABB
	Indicating Lamps:- Schneider/ Siemens/ ESBEE
	Protection relays (Numeric):- ABB/ Schneider/ Siemens
	CT's:- AE/ Kappa/ Pragati
	Selector Switch/ Toggle switch:- Kaycee/ Salzer (L&T)
	VFD:- Danfoss/ ABB/ Siemens
<b>1.0</b>	<b>VFD Starter Panel for AHU</b>
	3-Phase supply, VFD Starter for Existing AHU 25000 CFM
	Supply of HVAC dedicated VFDs with minimum IP 54 rating enclosure with inbuilt disconnect switch in VFD, complying with the tender specifications and having:
	5% non-saturating dual reactors on both rails of DC bus. Swinging chokes which do not provide full harmonic filtering throughout the entire load range are not acceptable. VFDs with saturating (non-linear) DC reactors to provide additional 3% AC chokes.
	Shall comply with requirements of IEC 61800-3 : 2004, Category C1 with 50m motor cable(Unrestricted Distribution).
	VFD shall be suitable to satisfactory work on 415 $\pm$ 10% voltage range.
	VFD shall be equipped with over load/ earth fall protection
	Three-feedback PID controllers to control the speed of the VFD & other functions.
	VFD must have min. 2 PID controllers inbuilt.
	Alpha numeric Graphical Display with inbuilt energy meter, ammeter, voltmeter etc. and shall be capable of displaying any 5 parameters simultaneously.
	BMS compatibility : RS-485 connector with BacNet over IP communication protocol
	VFD shall be capable of withstanding 100 K Amperes Short circuit current at Output terminals
	The complete VFD shall be factory manufactured and tested and no external component shall be allowed. Test certificate of each VFD (serial Number wise) shall be furnished by supplier.
	The VFD shall be provided with following min. number of IOs: 2 AI 2 AO 6 DI 3 DO
	<b>Note:-</b> Automatic changeover arrangement between VFD starter & existing AHU starter so that supply shift to existing starter in case of any VFD failure. -Contractor shall provide all the necessary components & accessories for integration with existing system and desired operation
<b>2.0</b>	<b>Cabling:</b>

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	Supply & laying of following 1100 volt grade XLPE insulated, PVC sheathed, copper conductor armoured cables (Confirming To IS:7098 Part-I) including termination as per specification in existing trenches, cable trays, ducts, over bed of sand, clad to wall with suitable clamp including, saddles fixing bolts, connecting testing and commissioning.
	<b>Make:-</b> KEI/ RR Kabel/ Finolex
<b>3.0</b>	<b>Cable Tray:</b>
	Supply, fabricating and installing following size of perforated M.S. cable trays including support, horizontal and vertical bends, reducers, tees, cross members and other accessories as required, and duly suspended from the ceiling with M.S. suspenders, including painting etc.
	<b>Make:-</b> Aditya/ Indeana/ MEM
<b>4.0</b>	<b>G.I. Earthing Strip:</b>
	Supply, installation, testing and commissioning of following sizes of G.I. strip/wire clamped to walls, cable trays, bus ducts, cables in recess or surface etc for equipment/ System / Lightning protection earthing complete as required including inter connection between length at joints, all fixing accessories saddles, clamps etc. and other fixing hardware material as required for proper installation.
<b>5.0</b>	<b>G.I. Earthing Wire:</b>
	Supply, installation, testing and commissioning of following sizes of G.I. Wire multistrand, Flexible copper conductor PVC insulated FRLS wire conforming to IS694 amended up to date
	<b>Sub Total</b>

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**1) Scope of Work:**

**a) Preparation of Implementation plan:**

- After award of LoA, Bidder shall carry out the detailed survey along with EESL representative which includes collection of (but not limited to) schematics, layout, design parameters, measurement, compliance with project guidelines and other documents, as requested by EESL
- Bidder shall prepare the detail working/shop drawing showing the details of equipment's to be installed and ancillary work to be carried out.
  - Layout drawings including sections of the Filtration system with each filter section to be installed in AHU, Fresh air blower, TFA with equipment sections and plans in the drawing.
  - Floor Layout describing built up area, and number of persons per sq.ft.
  - Duct layout plans showing sizes, locations of dampers, grilles & diffusers of all floors including AHU rooms.
  - Ventilation layout plans
  - Electrical panel, sub panels, power & control wiring drawings.
  - Foundation/structural details of all equipment's.
  - Any other drawings/document necessary for the project and/or as directed by EESL
- Bidder shall submit signed three copies of survey report mentioning the detail working/shop drawing, detailed BOQ, compliance with government guidelines, HVAC related compliances, details of implementation team, implementation plan and other documents, as requested to EESL for ensuring that the works will be carried out in accordance with the specifications and drawings, including such changes as may have been directed by EESL upon. The report along with the annexures must be submitted within 3 weeks from the date of allocation and must be submitted by CA, bidder to EESL/Owner, as directed for approval
- Coordination and approval shall be taken from concerned department of the buildings for the necessary changes before submitting the report to EESL.
- Further to it, Bidder have to prepare a presentation for stakeholders and EESL survey.

Further,

- The approval of the drawings by the Owner / Consultant shall in no way relieve the Contractor from his obligations to provide a complete and satisfactory plant installation, testing and commissioning as per intent and purpose as laid down in the specifications.
- Any omissions and / or errors shall be made good or rectified whether or not the drawings are approved. Contractor shall obtain written approval for samples (like grills / diffusers) and other materials before placing the order. Contractor shall guarantee the specified inside conditions at specified outside conditions. Prior to the completion of the work, the contractor shall furnish to the employer (4) four sets of a comprehensive manual, describing all components furnishing a list of spare parts and setting forth in details the instructions for the operation and maintenance of the plant.
- The Contractor shall also fix in the plant room, neatly typed and framed, instructions in details, for the starting and running of the plant.

**b) Supply and Manufacture:**

- The successful bidder(s) should submit Data Sheet, General Technical Particular (GTP), Design & General Arrangement (GA) drawing of the system along with Bill of Quantity (BOQ) for EESL approval before supply/PDI. Also, bidder has to take drawing approval for the complete system

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from EESL within 15 days from the date of project allocation. Further manufacturer details and credential should be given for EESL records.

- Successful bidder has to submit the pre dispatch inspection (PDI) request with details (Refer Section...) of a complete system within 10 days from the approval date of survey report by EESL. The material shall be dispatched within 3 days from the date of clearance given by EESL, failing which suitable LD clause will be imposed.
- Coordination and written approval shall be taken from the nodal officer of the project building for civil work, electricity work, safety work etc. for the necessary changes before delivery of the items.
- Prior measurements of pressure drop, flow rate and energy consumption shall be measured for 12 hours (on periodic basis, as per EiC) before start of execution for co-relation after the implementation

**c) Installation & Commissioning:**

- Bidder shall comply with all applicable regulatory and statutory norms. Bidder has to obtain approval/NOC from competent authority of the building for implementing the project at each site.
- Successful bidder should have finalized sub-bidders and purchase order (P.O.) on all materials such as filters within 30 days from the date of notification of award of Contract and unpriced P. O. copies will be submitted to EESL within 30 days from date of issue of allocation
- Each system is to be provided with a colored metallic sticker duly riveted displaying Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency (RAISE), EESL Logo, unique system ID, Service Centre address and toll-free no. of EESL i.e.,1800 180 3580 etc. Successful bidder(s) has to ensure that content on name plate should persist for project period from date of installation. (Size and design of stickers will be provided by EESL)
- 
- Successful bidder should submit the Certificate (as per prescribed format in color scan & hard copy and photographs of each system installed which must show complete installation setup with concerned stakeholder. Selected bidder should submit the daily progress report of installation in prescribed format.
- 
- Successful bidder(s) should submit the monthly installation report (colored) in hard copy including web-based results, if applicable to the nodal officer onsite on 25th of every month. Installation report should match with the Web Application Data. Non-compliance on this clause is mandatory requirement for processing of payment.
- 
- Successful bidder shall ensure that the project gets completed within the stipulated time frame. A Project Monitoring Report/Impact Assessment Report shall be submitted to EESL during the after 1 year of satisfactory completion of each project.
- 
- After installation/commissioning, the System will be handed over to concerned authority and as the case may be and submit the completion certificate duly signed by nodal officer to EESL within 15 days from the date of installation (in the prescribed format of EESL).

**d) Operation & Maintenance (O&M):**

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- Bidder has to submit an Operation, Instruction & Maintenance Manual, in English language, should be provided with each system in a simple language in the Manual:
- Basic principle.
- A small write-up (with a block diagram) on the system and expected performance.
- A simple single line diagram (SLD) depicting the electrical circuits and control mechanism
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number
- Clear instructions on regular maintenance and trouble-shooting
- Preventive maintenance schedule
- Detail information about warranty coverage
- DO's and DONT's. (and implications of not following)
- Name & address of contact person (local) for repair & maintenance, in case of non-functionality of system
- Minimum 10 hard copies (to be printed in booklet form) kept at each site. Also, to be provided to EESL as and when required.

Note: Manual shall be provided solely for the proper operation & maintenance of the system and shall not be used as a marketing/sales material.

- The Operation & Maintenance (O&M) cost is in-built in the system cost. The bidder shall provide annual maintenance with 3 years' warranty of the system from the date of project completion certificate
- It is mandatory for the bidder to open an authorized service center at each site. The successful bidder should share the O&M report on weekly basis (in the format prescribed by EESL). It is also mandatory for the bidder to submit address and contact details of service Centre at each site with contact details of specific maintenance engineer of each service center within 7 days from the date of installation. In case of any change in contact details /address of service center and site engineer, it should be informed immediately to EESL. Even if no change, Bidder has to share the maintenance site engineer details on weekly basis for all constituencies.
- Successful bidder shall do the preventive maintenance at the PMR: interval of every 3 months from the date of system installed and should submit the report in prescribed format to EESL. If bidder need to increase the frequency of maintenance for meeting the threshold limits. No extra cost is payable to bidder in this regard.
- Further necessary training & awareness along with O&M manual shall be provided during preventive maintenance.
- Successful bidder shall depute sufficient service personnel at each service center to make routine maintenance. The maintenance shall include thorough testing & replacement of any damaged parts.
- Successful bidder shall furnish Weekly Project Update Report and should conduct field visits as and when it is necessary. Also, EESL reserves the right to undertake field visits any time during/after project implementation phase and for this one representative of successful bidder should accompany EESL team
- Successful bidder shall furnish Satisfactory Report duly certified/approved by the stakeholder to EESL.
- To ensure timely maintenance, necessary spare parts & tools shall be available at nearby site.

**e) Training, Awareness and sensitization:**

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- The stakeholder onsite shall be imparted with relevant training on system operation and general maintenance techniques. Capacity-building of the end user for uninterrupted maintenance on quarterly basis.
  - Successful bidder shall submit the detailed report (with HD photos) and short 5-minute high definition video per site to client/EESL with relevant photographs and videos at every stage.
- The Training, Awareness and sensitization related cost is in-built in the system cost. The bidder shall provide relevant evidence as and when required.

**f) WARRANTY AND MAINTENANCE:**

- The complete system and name Plate (EESL will provide the details) shall be warranted and maintained for up to 3 years from the date of PCC.
- The maintenance service provided shall ensure proper functioning of the system as a whole. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided by the bidder, at no extra cost to EESL
- Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc. Successful bidder indemnifies EESL for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by successful bidder as per settlement solely. EESL has no role to play in this matter. (Indemnity Bond to be signed with EESL)
- Successful bidder is to submit interchangeability certificate for its product supplied for replacement during warranty and maintenance period and even when it is purchased from open market. In case due to change in technology, the supplied product is not available during warranty/ maintenance period than the improved version of product can be used in warranty/ maintenance period with same or improved technical parameters or the combination thereof after written communication of Engineer in Charge at same cost& terms and conditions. Successful Bidder, on whom letter of award has been placed, has also to confirm that the prices of improved version of product are not lesser than the original product or its parts in comparison.
- Local representative of bidder should meet concerned authority every quarter and should submit signed copy of Minutes of Meeting with EESL and copy to client.

## Technical Specifications:

### AIR FILTRATION

#### SCOPE

The air used in an air-conditioning system must be filtered to maintain a clean atmosphere in the conditioned space. The concentration of contaminants in the air and the degree of cleanliness required in the conditioned space will determine the type of filter or filters that must be used.

A highly efficient hybrid air purification system with pre-filters, media filters, ESP filters, carbon/ chemical filters, germicidal UV-C system shall be designed to achieve below mentioned desired high level (threshold value) of Indoor Air Quality with a very low-pressure drop that can integrate with the existing building's air delivery system:

	Parameters	Unit	Threshold value
Basic Parameters	CO <sub>2</sub>	ppm	Ambient + 350
	PM 2.5	µg/m3	<15
	CO	ppm	<2
	TVOC (equivalent to isobutylene)	µg/m3	<200
Complementary	PM 1 10	µg/m3	<50

IAQ Parameters	CH <sub>2</sub> O	µg/m <sup>3</sup>	<30
	SO <sub>2</sub>	µg/m <sup>3</sup>	<40
	NO <sub>2</sub>	µg/m <sup>3</sup>	<40
	O <sub>3</sub>	µg/m <sup>3</sup>	<50
	Total Microbial Count	CFU/m <sup>3</sup>	Indoor ≤ ambient
Occupant Satisfaction		%	90

**Note: -**

- Depending upon the building location, interiors and other local factors, pollutants that significantly affect human health should be also considered and corresponding threshold standard should be referred.
- In case the values of TVOC are higher than the specified threshold value as give in above table, individual VOCs shall be analysed.

The air purification system shall be capable of maintaining a high removal rate of all VOC's prior to the static media beds of either activated carbon followed by potassium permanganate impregnated alumina or a blend of activated carbon and alumina impregnated with potassium permanganate.

### HOUSING CONSTRUCTION (BY THE OEM)

The Air Purification System Vendor shall furnish the following minimum standard housing construction specifications.

- The system shall be a complete package, designed for the removal of TVOC's, Particulate matters & harmful gaseous components, gas phase contaminants, listed above, from the fresh air intakes and the recirculated air. Additionally, the system must be capable of destroying airborne bacteria / viruses / moulds and fungi.
- The side access housing to hold this air purification system shall be provided by the manufacturer designed to integrate with the AHU.
- Housing materials shall be suitable for indoor operation unless outdoor installation is specified.
- Housing shall be constructed of galvanized steel, seams welded where appropriate, and reinforced with support posts. The unit shall be provided with fully gasketed side access doors. Latches shall have a positive over centre locking action. All hinges and draw latches shall be constructed of corrosion resistant steel or ABS. Skid base shall be galvanized of minimum class VIII which is 120 gms/sq.m (total coating both side).
- Door seals shall be attached by mechanical means along with glue over full door face area.
- There shall be no bypass or leakage of air past any filter stage through the prefilter section and the purification system.
- Stainless steel nameplate with EESL & RAISE logo shall be provided, permanently attached to the unit. Nameplate shall be engraved with the system type and serial number.

### CHEMICAL MEDIA BED SECTIONS

Media holding modules shall have dimensions to suit the installation and required duty conditions. Inlet shall have a pliable seal material to insure positive sealing against holding track. Differential pressure across the module shall be designed to increase contact effectiveness.

### PARTICULATE FILTERS OR MEDIA FILTERS

#### PRE-FILTERS

The filter section containing not more than 50mm thick washable synthetic type air filters having anodized aluminium frame with minimum 1.6 mm thickness. The filter shall have minimum 90% efficiency down to 10 microns. The media shall be supported with HDPE mesh on one side and aluminium mesh on other side. Filter banks shall be easily accessible and designed for easy withdrawal and renewal of filter cells. Filter

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framework shall be fully sealed and constructed from aluminium alloy. Each filter shall carry test certificate from third party certified air filter testing laboratories. The filter area shall be made up of panels of size convenient for handling and cleaning. The filter testing method shall be as per ASHRAE-52.2 latest version. Efficiency of pre-filters shall be in accordance with ISO:16890-2017

**Design Parameters of Filters**

Parameter	Filter
Type	Flange type
Grade	MERV-8
Efficiency	90% down to 10 micron
Max. Pressure Drop (mm WG) not exceeding	5 mm
Casing	Aluminium Anodized
Sealing of medium	Epoxy or equivalent
Medium	Synthetic medium supported by HDPE mesh and aluminium mesh
Sample testing at Mfr's works	No
Packing	Yes
Test Method	As per ASHRAE 52.1
Washable	Yes

**FINE FILTERS**

Each unit shall be provided with a factory assembled filter section containing not more than 300mm thick synthetic media type air filters having anodized aluminium frame with minimum 1.6 mm thickness. The filter shall have minimum 95% efficiency down to 3 microns. The media shall be supported with HDPE mesh on one side and aluminium mesh on other side. Filter banks shall be easily accessible and designed for easy withdrawal and renewal of filter cells. Filter framework shall be fully sealed and constructed from aluminium alloy. Each filter shall carry test certificate from manufacturer. The filter area shall be made up of panels of size convenient for handling. The filter testing method shall be as per ASHRAE 52.2 latest edition. Efficiency of fine filters shall be in accordance with ISO:16890

**Design Parameters of Filters**

Parameter	Filter
Type	Flange type
Grade	MERV-13 or above
Efficiency	95% down to 3 micron
Max. Pressure Drop (mm WG) not exceeding	12 mm
Casing	Aluminium Anodized
Sealing of medium	Epoxy or equivalent
Medium	Synthetic medium supported by HDPE mesh and aluminium mesh
Sample testing at Mfr's works	No
Packing	Yes
Test Method	As per ASHRAE 52.2
Washable	No

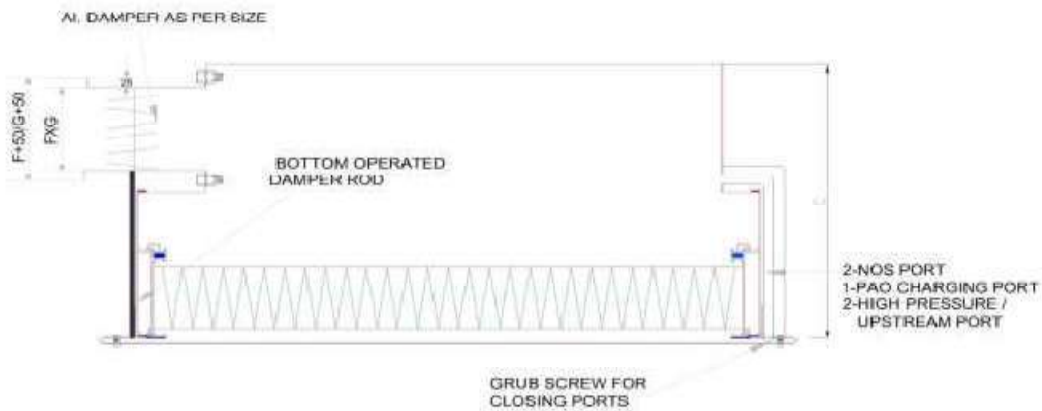
**MINI PLATE HEPA FILTERS & FILTER PLENUM**

Gel Seal Terminal Boxes shall be factory assembled designed using anodized Extruded Aluminium with minimum 1.6 mm thickness having Knife edge arrangement to accommodate Gel Type HEPA Filters. Terminal boxes are equipped with PAO/ DOP injection port, High & low pressure ports & arrangement for holding Perforated Grill. The Terminal boxes are complete with Gel seal mini pleat HEPA filters & finished with SS-304 Perforated. Filters shall be easily accessible and designed for easy withdrawal and replacement. Face velocity across these filters shall not exceed the permissible limits specified during testing for each filter technology. Each filter shall carry test certificate from manufacturer. The filter testing method shall be

as per ASHRAE-52.2 latest edition. The unit shall be light weight & easy to install, Robust, Superior Finish and Corrosion Resistance.

**Technical Specifications of Terminal Boxes**

Parameters	Specifications
Sealing Arrangement	PU Sealed at 4 corners
Terminal Box Entry	From Below The False Ceiling/ Clean room side
Filter Entry	From Below The False Ceiling/ Clean room side
Air Entry	From Side
Duct Connection	Rectangle
Damper	Aluminium Extruded Low Leakage
Damper Operation	From Clean room side with worm wheel gear.
Perforated Sheet	18G SS-304
Perforated Sheet Fixing	SS DOME BOLT
Hanging Arrangement	Removable Cleats 4 Nos
Filter Fixing	Pressure Plates



**Technical Specifications of Mini Pleat HEPA Filter**

Parameters	Specifications
Casing	Anodised Al. Extruded
Efficiency	99.995 % down to 0.3 Micron
Max. Pressure Drop (mm WG) not exceeding	20 MM of WG
Media	Imported Sub-Micronics Glass Fibre media interspaced with hot melt breads & both side protected with powder coated Aluminium
Eurovent Class	H-13 or above
Temperature	Ambient
Media Sealing	PU
Sample testing at Mfr's works	Yes
Packing	Yes
Test Method	As per ASHRAE 52.1
Washable	No
Filter Sealing	Gel Seal

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