

**ADVANCED TECHNICAL TRAINING CENTRE**  
**AN ISO 9001 CERTIFIED INSTITUTE**  
**BARDANG, SINGTAM, EAST SIKKIM - 737134**

Telephones: 94340-35381

**COMPETITIVE BIDDING FOR  
SUPPLY & INSTALLATION OF “FLEXIBLE MANUFACTURING SYSTEM (FMS)  
LAB” EQUIPMENT (UNDER MODROB)”**

**(Package: MODROB/2020/01)**

BID REFERENCE : ATTC/MODROB/2020/01

LAST DATE AND TIME FOR RECEIPT OF BIDS : **25.02.2021 UPTO 1530 HRS**

TIME AND DATE OF OPENING OF BIDS : **26.02.2021 AT 1430 HRS**

PLACE OF OPENING OF BIDS : ADVANCED TECHNICAL TRAINING CENTRE, BARDANG, EAST SIKKIM

ADDRESS FOR COMMUNICATION : THE PRINCIPAL, ATTC BARDANG, SINGTAM, EAST SIKKIM - 737134

# **SECTION – I**

## **INVITATION FOR BIDS (IFB)**

## COMPETITIVE BIDDING FOR THE SUPPLY OF GOODS

### SECTION – I

#### INVITATION FOR BIDS (IFB)

1. Advanced Technical Training Centre, Bardang, East Sikkim has received funds under MODROB from AICTE towards modernization of its existing Flexible Manufacturing System Lab
2. Principal, ATTC Bardang, now invites sealed bids on behalf of Advanced Technical Training Centre from eligible bidders for supply of equipment listed below :

Package	Description of Package	Estimated Amounts (Rs)	Amount of Bid Security in Rs.
MODROB/2020/ 1	Supply of Flexible Manufacturing System (FMS) Lab Equipment's	Rs. 17,25,490/-	20,000/-

3. Interested eligible Bidders may obtain further information from the office of The Head of Department (DM), ATTC Bardang, Singtam, East Sikkim - 737134
4. All bids must be accompanied by a bid security (in a **separate** sealed envelope) in favor of **THE PRINCIPAL, ATTC** as specified in the bid document and must be delivered to the above office at the date and time indicated above.
5. Bids will be opened in the presence of Bidders' representatives who choose to attend on the specified date and time.
6. In the event of the date specified for bid receipt and opening declared as a public holiday in office of ATTC, Bardang the date for submission of bids and opening of bids will be the following working day at the appointed times.

## **SECTION - II**

# **INSTRUCTIONS TO BIDDER (ITB)**

## SECTION - II

### INSTRUCTIONS TO BIDDERS (ITB)

#### TABLE OF CLAUSES

<u>Clause No.</u>	<u>Topic Number</u>	<u>Page No.</u>	<u>Clause No.</u>	<u>Topic Number</u>	<u>Page No.</u>
	<b>A. INTRODUCTION</b>	7		<b>D. SUBMISSION OF BIDS</b>	13
1.	Source of Funds	7	18.	Sealing and Marking of Bids	13
2.	Eligible Bidders	7	19.	Deadline for Submission of Bids	13
3.	Eligible Goods & Services	7	20.	Late Bids	14
4.	Cost of Bidding	8	21.	Modification and withdrawal of Bids	14
	<b>B. BIDDING DOCUMENTS</b>	8		<b>E. OPENING AND EVALUATION OF BIDS</b>	14
5.	Contents of Bidding Documents	8	22.	Opening of Bids by the Purchaser	14
6.	Clarification of Bidding Documents	8	23.	Clarification of Bids	15
7.	Amendment of Bidding Documents	8	24.	Preliminary Examination	15
	<b>C. PREPARATION OF BIDS</b>	9	25.	Conversion to Single Currency	15
8.	Language of Bid	9	26.	Evaluation and Comparison of Bids	15
9.	Documents Comprising the Bid	9	27.	Domestic Preference	17
10.	Bid Form	9	28.	Contacting the Purchaser	17
11.	Bid Prices	9		<b>F. AWARD OF CONTRACT</b>	17
12.	Bid Currencies	10	29.	Post qualification	17
13.	Documents Establishing Bidder's Eligibility & Qualification	10	30.	Award Criteria	17
14.	Documents Establishing Goods' Eligibility & Conformity to Bid Documents.	11	31.	Purchaser's Right to vary quantities at Time of Award	18
15.	Bid Security	11	32.	Purchaser's Right to Accept any Bid and to Reject any or all Bids.	18
16.	Period of Validity of Bids	12	33.	Notification of Award	18
17.	Format and Signing of Bid	13	34.	Signing of Contract	18
			35.	Performance Security	18
			36.	Corrupt and Fraudulent Practices	18

## **SECTION - I**

### **A. INTRODUCTION**

#### 1. SOURCES OF FUNDS

- 1.1 ATTC Bardang has received funds of **Rs. 17, 25,490/-** from AICTE for Modernization of its existing Flexible Manufacturing System Lab and intends to apply the proceeds of this to eligible payment under the Contract for which this Invitation for Bid is issued.

#### 2. ELIGIBLE BIDDERS

- 2.1 This Invitation for Bids is open to only the suppliers who have received this document from ATTC Bardang.

#### 3. ELIGIBLE GOODS AND SERVICES

- 3.1 The origin of goods and services is distinct from the nationality of the Bidder.

#### 4. COST OF BIDDING

- 4.1 The Bidder shall bear all costs associated with the preparation and submission of its bid. ATTC Bardang (hereinafter referred to as "the Purchaser"), will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

### **B. THE BIDDING DOCUMENT**

#### 5. CONTENT OF BIDDING DOCUMENTS

- 5.1 The goods required, bidding procedures and contract terms are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents include:

- (a) Instruction to Bidders (ITB) – Section II;
- (b) General Conditions of contract (GCC) - Section III;
- (c) Special Conditions of Contract (SCC) - Section IV;
- (d) Schedule of Requirements - Section V;
- (e) Technical Specifications - Section VI;
- (f) Qualification Criteria - Section VIA;
- (g) Bid form and Price Schedule – Section VII;
- (h) Bid Security Form - Section VIII;
- (i) Contract Form - Section IX;
- (j) Performance Security Form - Section X;
- (k) Performance Statement Form - Section XI;
- (l) Manufacturer's Authorization form - Section XII;
- (m) Eligibility for the Provision of Goods, Works and Services in Bank-financed Procurement - Section XIV; and
- (n) Equipment and Quality Control Form – Section XV.

- 5.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

#### 6. CLARIFICATION OF BIDDING DOCUMENTS

6.1 A prospective Bidder requiring any clarification of the bidding documents may notify the PURCHASER in writing or by telex or cable or fax at the mailing address indicated in the Invitation for Bids. The Purchaser will respond in writing to any request for clarification of the bidding documents which it receives not later than 5 days prior to the deadline for submission of bids prescribed in the IFB. Written copies of the response (including an explanation of the query but without identifying the source of inquiry) will be sent to all prospective bidders which have received the bidding documents.

## 7. AMENDMENT OF BIDDING DOCUMENTS

7.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by amendment.

7.2 All prospective bidders who have received the bidding documents will be notified of the amendment in writing or by cable or by fax, and will be binding on them.

7.3 In order to allow prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.

## **C. PREPARATION OF BIDS**

### 8. LANGUAGE OF BID

8.1 The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser shall be written in English language. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language in which case, for purposes of interpretation of the Bid, the translation shall govern.

### 9. DOCUMENTS CONSTITUTING THE BID

9.1 The bid prepared by the Bidder shall comprise the following components:

- (a) a Bid Form and a Price Schedule completed in accordance with ITB Clauses 10,11 and 12;
- (b) documentary evidence established in accordance with ITB Clause 13 and Qualification Criteria - Section VIA that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted. Bidder shall submit Performance Statement (Section XI) and Manufacturer's Authorization Form (Section XII) duly filled in;
- (c) documentary evidence established in accordance with ITB Clause 14 that the goods and ancillary services to be supplied by the Bidder are eligible goods and services and conform to the bidding documents; and
- (d) bid security (Section VIII) furnished in accordance with ITB Clause 15;
- (e) Equipment and Quality Form duly filled in and signed as per Section XV;
- (f) Duplicate copy of bid document duly signed and stamped on all pages as a token of acceptance of all clauses; and
- (g) Power of Attorney of the person signing the bid.

### 10. BID FORM

10.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in the bidding documents, indicating the goods to be supplied, a brief description of the goods, and their country of origin, quantity and prices.

## 11. BID PRICES

11.1 The Bidder shall indicate on the Price Schedule the unit prices of the goods it proposes to supply under the contract. Bidder shall quote for the complete requirement of goods and services specified under each schedule on a single responsibility basis, failing which such bids will not be taken into account for evaluation and will not be considered for award.

11.2 Prices indicated on the Price Schedule shall be entered separately in the following manner:

- (i) the price of the goods, quoted (ex-works, ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, as applicable), including all duties and sales and other taxes already paid or payable:
  - (a) on components and raw material used in the manufacture or assembly of goods quoted ex-works or ex-factory; or
  - (b) on the previously imported goods of foreign origin quoted ex-showroom, ex-warehouse or off-the-shelf.
- (ii) any Indian duties, sales and other taxes which will be payable on the goods if this Contract is awarded;
- (iii) the price for inland transportation, insurance and other local costs incidental to delivery of the goods to their final destination; and
- (iv) the price of other incidental services listed in Clause 8 of the Special Conditions of Contract.

11.3 The bidders separation of the price component in accordance with ITB Clause 11.2 above will be solely for the purpose of facilitation the comparison of bids by the Purchaser and will not in any way limit the Purchaser's right to contract on any of the terms offered.

11.4 Price quoted by bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to ITB Clause 24.

## 12. BID CURRENCIES

12.1 Prices shall be quoted in Indian Rupees:

## 13. DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS

13.1 Pursuant to ITB Clause 9, the Bidder shall furnish, as part of its bid, documents establishing the Bidder's eligibility to bid and its qualifications to perform the Contract if its bid is accepted.

13.2 The documentary evidence of the Bidder's qualifications to perform the Contract if its bid is accepted, shall establish to the Purchaser's satisfaction:

- (a) That, in the case of the Bidder, offering to supply goods under the contract which the Bidder does not manufacture or otherwise produce, the Bidder has been duly authorized (as per authorization form in Section XII) by the goods' Manufacturer or producer to supply the goods in India.



- (b) That the Bidder has the financial, technical, and production capability necessary to perform the contract and meets the criteria outlined in the Qualification requirements specified in Section VI-A. To this end, all bids submitted shall include the following information:
  - (i) The legal status, place of registration and principal place of business of the company or firm or partnership, etc.;
  - (ii) Details of experience and past performance of the bidder on equipment offered and on those of similar nature within the past three/five years and details of current contracts in hand and other commitments (suggested Proforma given in Section XI);

#### 14. DOCUMENTS ESTABLISHING GOODS' ELIGIBILITY AND CONFORMITY TO BIDDING DOCUMENTS

- 14.1 Pursuant to ITB Clause 9, the Bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding documents of all goods and services which the Bidder proposes to supply under the contract.
- 14.2 The documentary evidence of conformity of the goods and services eligibility shall consist of a statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.
- 14.3 The documentary evidence of conformity of the goods and services to the bidding documents may be in the form literature, drawings and data, and shall consists of :
  - (a) a detailed description of the essential technical and performance characteristics of the goods.
  - (b) a list giving full particulars, including available sources and current prices, of spare parts, special tools, etc., necessary for the proper and continuing functioning of the goods for a period of two years, following commencement of the use of the goods by the Purchaser; and
  - (c) an item-by-item commentary on the Technical Specifications demonstrating substantial responsiveness of the goods and services to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.
- 14.4 For purposes of the commentary to the furnished pursuant to ITB Clause 14.3(c) above, the Bidder shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers designated by the Purchaser in its Technical Specifications are intended to be descriptive only and not restrictive. The bidder may substitute alternative standards, brand names and/or catalogue numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical specifications.

#### 15. BID SECURITY

- 15.1 Pursuant to ITB Clause 9, the Bidder shall furnish, as part of its bid, a bid security in the amount mentioned against each package.
- 15.2 The bid security is required to protect the Purchaser against the risk of Bidder's conduct which would warrant the security's forfeiture, pursuant to ITB Clause 15.7.
- 15.3 The bid security shall be in Indian Rupees and shall be in favor of **the Purchaser** and in one of the following forms:
  - (a) A bank guarantee or an irrevocable letter of credit issued by a nationalized/scheduled bank located in India or a bank located abroad, in the form provided in the bidding documents or another form

acceptable to the Purchaser and valid for **45** days beyond the validity of the bid; (i.e. Total 90 days + 45 days = **135** days from deadline of submission of bids) or

(b) A cashier's cheque, certified cheque or demand draft.

15.4 Any bid not secured in accordance with ITB Clauses 15.1 and 15.3 above will be rejected by the Purchaser as non-responsive, pursuant to ITB Clause 24.

15.5 Unsuccessful bidder's bid securities will be discharged. Returned as promptly as possible as but not later than 30 days after the expiration of the period of bid validity, pursuant to ITB Clause 16.

15.6 The successful Bidder's bid security will be discharged upon the Bidder signing the Contract, pursuant to ITB Clause 34, and furnishing the performance security, pursuant to ITB Clause 35.

15.7 The bid security may be forfeited:

(a) If a Bidder (i) withdraws its bid during the period of bid validity specified by the Bidder on the Bid form; or (ii) does not accept the correction of errors pursuant to ITB Clause 24.2; or

(b) In case of a successful Bidder, if the Bidder fails:

(i) to sign the contract in accordance with ITB Clause 34; or

(ii) to furnish performance security in accordance with ITB Clause 35.

## 16. PERIOD OF VALIDITY OF BIDS

16.1 Bids shall remain valid for **90** (Ninety) days after the deadline for submission of bids prescribed in the ITB, pursuant to ITB Clause 19. A bid valid for a shorter period shall be rejected as non-responsive.

16.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by cable or telex or fax). The bid security provided under ITB Clause 15 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security.

16.3 Bid evaluation will be based on the bid prices.

## 17. FORMAT AND SIGNING OF BID

17.1 The Bidder shall prepare two copies of the bid, clearly marking each "Original Bid" and "Copy Bid", as appropriate. In the event of any discrepancy between them, the original shall govern.

17.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the Contract. The latter authorization shall be indicated by written power-of-attorney accompanying the bid. All pages of the bid, except for unamended printed literature, shall be initialed by the person or persons signing the bid.

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

## **D. SUBMISSION OF BIDS**

### 18. SEALING AND MARKING OF BIDS

- 18.1 The Bidders shall seal the original and the copy of the bid in separate inner envelopes, duly marking the envelopes as “Original” and “Copy”. He shall then place all the inner envelopes in an outer envelope.
- 18.2 THE INNER AND OUTER ENVELOPES SHALL:
- (a) be addressed to the following address:  
**THE PRINCIPAL ,  
ADVANCED TECHNICAL TRAINING CENTRE,  
BARDANG, SINGTAM,,  
EAST SIKKIM  
PIN - 737134**
  - (b) bear the Project Name the Invitation for Bids (IFB) title and number, and a statement “Do not open before **1430 hrs on 26<sup>th</sup> February 2021.**”
- 18.3 The inner envelopes shall also indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared “late”.
- 18.4 If the outer envelope is not sealed and marked as required by ITB Clause 18.2, the purchaser will assume no responsibility for the bid’s misplacement or premature opening.
- 18.5 Telex, cable or facsimile bids will be rejected.
19. DEADLINE FOR SUBMISSION OF BIDS
- 19.1 Bids must be received by the Purchaser at the address specified under ITB Clause 18.2(a) no later than the time and date specified in the Invitation for Bids (Section I). In the event of the specified date for the submission of Bids being declared a holiday for the Purchaser, the Bids will be received upto the appointed time on the next working day.
- 19.2 The Purchaser may, at its discretion, extend this deadline for submission of bids by amending the bid documents in accordance with ITB Clause 7, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.
20. LATE BIDS
- 20.1 Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, pursuant to ITB Clause 19, will be rejected and/or returned unopened to the Bidder.
21. MODIFICATION AND WITHDRAWAL OF BIDS
- 21.1 The Bidder may modify or withdraw its bid after the bid’s submission, provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of bids.
- 21.2 The Bidder’s modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of ITB Clause 18. A withdrawal notice may also be sent by telex or cable or fax but followed by a signed confirmation copy, post marked not later than the deadline for submission of bids.
- 21.3 No bid may be modified subsequent to the deadline for submission of bids.
- 21.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the bid form. Withdrawal of a bid during this interval may result in the Bidder’s forfeiture of its bid security, pursuant to ITB Clause 15.7.

## E. BID OPENING AND EVALUATION OF BIDS

### 22. OPENING OF BIDS BY ATTC BARDANG

- 22.1 ATTC BARDANG will open all bids, in the presence of Bidders' representatives who choose to attend, at **1430 hrs. on 26<sup>th</sup> February 2021** and in the following location:

**ADVANCED TECHNICAL TRAINING CENTRE,  
BARDANG, SINGTAM, EAST SIKKIM  
PIN - 737134**

The Bidders' representatives who are present shall sign a register evidencing their attendance. In the event of the specified date of Bid opening being declared a holiday for ATTC BARDANG, the Bids shall be opened at the appointed time and location on the next working day.

- 22.2 The bidders' names, bid modifications or withdrawals, bid prices, discounts, and the presence or absence of requisite bid security and such other details as ATTC BARDANG, at its discretion, may consider appropriate, will be announced at the opening. No bid shall be rejected at the bid opening, except for late bids, which shall be returned unopened to the Bidder pursuant to ITB Clause 20.
- 22.3 Bids (and modifications sent pursuant to ITB Clause 21.2) that are not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances.
- 22.4 ATTC BARDANG will prepare minutes of the bid opening.

### 23. CLARIFICATION OF BIDS

- 23.1 During evaluation of bids, ATTC BARDANG may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted.

### 24. PRELIMINARY EXAMINATION

- 24.1 ATTC BARDANG will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order. Bids from Agents, without proper authorization from the manufacturer as per Section XII, shall be treated as non-responsive.
- 24.1.1 The Bidder must quote for all the schedules and any bidder failing to do so will be treated as non-responsive and will not be considered.
- 24.2 ATTC Bardang will require a demonstration of the equipment's to be supplied to its technical personnel and the bidders must ensure that all equipment's to be supplied are to be demonstrated. The date for demonstration has to be within 10 days from the date of opening of bid. The date will have to be informed and approved by ATTC Bardang prior to the opening of the bid. Any bidder failing to demonstrate the equipment's will be termed as non responsive and will be rejected. The remarks from the technical personnel appointed by ATTC Bardang will also be considered during evaluation of the bid.**
- 24.3 The bid must be based on the unit price and the total quantity will be announced later to the successful bidder.
- 24.4 The Purchaser may waive any minor informality or non-conformity or irregularity in a bid which does not constitute a material deviation, provided such a waiver does not prejudice or affect the relative ranking of any Bidder.

- 24.5 Prior to the detailed evaluation, pursuant to ITB Clause 26, the Purchaser will determine the substantial responsiveness of each bid to the bidding documents. For purposes of these Clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the bidding documents without material deviations. Deviations from or objections or reservations to critical provisions such as those concerning Performance Security (GCC Clause 7), Warranty (GCC Clause 15), Force Majeure (GCC Clause 25), Limitation of liability (GCC Clause 29), Applicable law (GCC Clause 31), and Taxes & Duties (GCC Clause 33) will be deemed to be a material deviation. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- 24.6 If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
25. DELETED
26. EVALUATION AND COMPARISON OF BIDS
- 26.1 ATTC BARDANG will evaluate and compare the bids which have been determined to be substantially responsive, pursuant to ITB Clause 24 for each schedule separately. No bid will be considered if the complete requirements covered in the schedule is not included in the bid.
- 26.2 Evaluation of a bid will exclude and not take into account.
- (a) in the case of goods, manufactured in India or goods of foreign origin already located in India, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder;
  - (b) any allowance for price adjustment during the period of execution of the contract, if provided in the bid.
- 26.3 DELETED
- 26.4 Evaluation of a bid will take into account, in addition to the bid price (Ex-factory/ex-warehouse/off-the-shelf price of the goods offered from within India, such price to include all costs as well as duties and taxes paid or payable on components and raw material incorporated or to be incorporated in the goods, and Excise duty on the finished goods, if payable) and price of incidental services, the following factors, in the manner and to the extent indicated in ITB Clause 26.5 and in the Technical Specifications:
- (a) cost of inland transportation, insurance and other costs within India incidental to the delivery of the goods to their final destination;
  - (b) delivery schedule offered in the bid;
  - (c) deviations in payment schedule from that specified in the Special Conditions of Contract;
  - (d) the cost of components, mandatory spare parts and service;
  - (e) the availability in India of spare parts and after-sales services for the goods/equipment offered in the bid;
  - (f) the projected operating and maintenance costs during the life of the equipment; and
  - (g) the performance and productivity of the equipment offered.
- 26.5 Pursuant to ITB Clause 26.4, one or more of the following evaluation methods will be applied;
- (a) Inland Transportation, Insurance and incidentals:

- (i) Inland transportation, insurance and other incidentals for delivery of goods to the final destination as stated in ITB Clause 11.2 (iii).

The above costs will be added to the bid price.

- (b) Delivery Schedule:

- (i) The Supplier requires that the goods under the Invitation for Bids shall be delivered at the time specified in Schedule of Requirements. The estimated time of arrival of the goods at the project site should be calculated for each bid after allowing for reasonable transportation time. Treating the date as per schedule of requirements as the base, a delivery “adjustment” will be calculated for other bids at 2% of the ex-factory price including excise duty for each week of delay beyond the base and this will be added to the bid price for evaluation. No credit will be given to earlier deliveries and bids offering delivery beyond **2 weeks** of stipulated delivery period will be treated as non-responsive.

- (c) Deviation in Payment Schedule :

The Special Conditions of Contract stipulate the payment schedule offered by the Purchaser. If a bid deviates from the schedule and if such deviation is considered acceptable to the Purchaser, the bid will be evaluated by calculating interest earned for any earlier payments involved in the terms outlined in the bid as compared to those stipulated in this invitation, at a rate of **16 percent** per annum.

- (d) Cost of spare Parts:

- (i) Technical Specifications lists the items and quantities of major assemblies, components and selected items of spare parts, likely to be required during the initial 2 year period of operation of the equipment. The total cost of these items and quantities at the unit prices quoted in each bid will be added to the bid price.

- (e) Spare Parts and After Sales Service Facilities in India :

The cost to the Purchase of establishing the minimum service facilities and parts inventories, as outlined elsewhere in the bidding documents, if quoted separately, shall be added to the bid price.

27. Deleted.

## 28. CONTACTING THE PURCHASER

28.1 Subject to ITB Clause 23, no Bidder shall contact the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded. If the bidder wishes to bring additional information to the notice of the Purchaser, it should do so in writing.

28.2 Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison or contract award may result in rejection of the Bidder's bid.

## **F. AWARD OF CONTRACT**

### 29. POST-QUALIFICATION

29.1 The determination will take into account the Bidder's financial, technical and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder, Pursuant to ITB clause 13, as well as such other information as the Purchaser deems necessary and appropriate.

29.2 An affirmative determination will be a prerequisite for award of the Contract to the Bidder. A negative determination will result in rejection of the Bidder's bid, in which event the Purchaser will proceed to the next lowest evaluated bid to make a similar determination of that Bidder's capabilities to perform the contract satisfactorily.

30. AWARD CRITERIA

30.1 Subject to ITB Clause 32, the Purchaser will award the Contract to the Successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

31. PURCHASER'S RIGHT TO VARY QUANTITIES AT TIME OF AWARD

31.1 The Purchaser reserves the right at the time of Contract award to specify the quantity of goods and service originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions.

32. PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

32.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to the affected Bidder or bidders.

33. NOTIFICATION OF AWARD

33.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the successful bidder in writing by registered letter or by cable/telex or fax, to be confirmed in writing by registered letter, that its bid has been accepted.

33.2 The notification of award will constitute the formation of the Contract.

33.3 Upon the successful Bidder's furnishing of performance security pursuant to ITB Clause 35, the Purchaser will promptly notify the name of the winning Bidder to each unsuccessful Bidder and will discharge its bid security, pursuant to ITB Clause 15.

33.4 If, after notification of award, a Bidder wishes to ascertain the grounds on which its bid was not selected, it should address its request to the Purchaser. The Purchaser will promptly respond in writing to the unsuccessful bidder

34. SIGNING OF CONTRACT

34.1 At the same time as the Purchaser notifies the successful bidder that its bid has been accepted, the Purchaser will send the bidder the Contract Form provided in the bidding documents, incorporating all agreements between the parties.

34.2 Within **15** days of the receipt of the contract form, the successful bidder shall sign and date the contract and return it to the Purchaser.

35. PERFORMANCE SECURITY

35.1 Within 15 days of the receipt of notification of award from the Purchaser, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the bidding documents or in another form acceptable to the Purchaser.

35.2 Failure of the successful bidder to comply with the requirement of ITB Clause 34.2 or ITB Clause 35.1 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Purchaser may make the award to the next lowest evaluated bidder or call for new bids.

36. CORRUPT OR FRAUDULENT PRACTICES

- 36.1 ATTC BARDANG requires Bidders/ Suppliers/ Contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ATTC BARDANG :
- (a) defines, for the purposes of this provision, the terms set forth as follows :
    - (i) “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution, and
    - (ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, 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 Purchaser of the benefits of free and open competition;
  - (b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
  - (c) will declare a firm ineligible, either indefinitely for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, the contract.
- 36.2 Furthermore, Bidders shall be aware of the provision stated in sub-clause 5.4 and sub-clause 24.1 of the General Conditions of Contract.

## **SECTION – III**

# **GENERAL CONDITIONS OF CONTRACT (GCC)**



**SECTION - III : GENERAL CONDITIONS OF CONTRACT (GCC)**  
**TABLE OF CLAUSES**

<b>Clause No.</b>	<b>Topic</b>	<b>Page Number</b>
1	Definitions	20
2	Application	20
3	Country of Origin	20
4	Standards	21
5	Use of Contract Documents and Information	21
6	Patent Rights	21
7	Performance Security	21
8	Inspection and Tests	21
9	Packing	22
10	Delivery and Documents	22
11	Insurance	22
12	Transportation	22
13	Incidental Services	23
14	Spare Parts	23
15	Warranty	23
16	Payment	24
17	Prices	24
18	Change Orders	24
19	Contract Amendments	25
20	Assignment	25
21	Subcontracts	25
22	Delays in Supplier's Performance	25
23	Liquidated Damages	25
24	Termination for Default	25

25	Force Majeure	26
26	Termination for Insolvency	26
27	Termination for Convenience	26
28	Resolution of Disputes	27
29	Limitation of Liability	27
30	Governing Language	27
31	Applicable Law	28
32	Notices	28
33	Taxes and Duties	28

### **SECTION - III**

#### **GENERAL CONDITIONS OF CONTRACT**

#### **1. DEFINITIONS**

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

- (a) “The Contract” means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form signed by the parties, including all the attachments and appendices there to and all documents incorporated by reference therein;
- (b) “The Contract Price” means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;
- (c) “The Goods” means all the equipment, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the Contract;
- (d) “Services” means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training and other obligations of the Supplier covered under the Contract;
- (e) “GCC” means the General Conditions of Contract contained in this section.
- (f) “SCC” means the Special Conditions of Contract.
- (g) “The Purchaser” means the organization purchasing the Goods, as named in SCC.
- (h) “The Purchaser’s country” is the country named in SCC.
- (i) “The Supplier” means the individual or firm supplying the Goods and Services under this Contract.
- (j) “The Project Site”, where applicable, means the place or places named in IFB.
- (k) “Day” means calendar day.,

#### **2. APPLICATION**

2.1. These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

### 3. COUNTRY OF ORIGIN

- 3.1. For purposes of this Clause "Origin" means the place where the Goods are mined, grown or produced, or from which the Services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 3.2. The origin of Goods and Services is distinct from the nationality of the Supplier.

### 4. STANDARDS

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

### 5. USE OF CONTRACT DOCUMENTS AND INFORMATION;

- 5.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 5.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in GCC Clause 5.1 except for purposes of performing the Contract.
- 5.3 Any document, other than the Contract itself, enumerated in GCC Clause 5.1 shall remain the property of the Purchaser and shall be returned (in all copies to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.
- 5.4 The supplier shall permit the Purchaser to inspect the Supplier's accounts and records relating to the performance of the Supplier and to have them audited by auditors appointed by the Purchaser, if so required by it.

### 6. PATENT RIGHTS

- 6.1 The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

### 7. PERFORMANCE SECURITY

- 7.1 Within 15 days of receipt of the notification of contract award, the Supplier shall furnish performance security in the amount specified in SCC.
- 7.2 The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 7.3 The Performance Security shall be denominated in Indian Rupees and shall be in one of the following forms:
  - (a) A Bank guarantee or irrevocable Letter of Credit, issued by a nationalized/scheduled bank located in India or a bank located abroad acceptable to the Purchaser, in the form provided in the bidding documents or another form acceptable to the Purchaser; or
  - (b) A cashier's cheque, certified cheque, or demand draft.

7.4 The performance security will be discharged by the Purchaser and returned to the supplier not later than 30 days following the date of completion of the supplier performance obligation including any warranty obligations, unless specified otherwise in SCC.

## 8. INSPECTIONS AND TESTS

8.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. SCC and the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted.

The Purchaser will require a demonstration of the equipments to be supplied to its technical personnel and the bidders must ensure that all equipments to be supplied are to be demonstrated. The demonstration will be held at a date and time agreed upon by the supplier and the purchaser

8.2 An inspection and tests will also be conducted at the Goods final destination on supply of the items to verify its contents with that was agreed to be supplied.

8.3 Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

8.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at Project Site shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

8.5 Nothing in GCC Clause 8 shall in any way release the Supplier from any warranty or other obligations under this Contract.

## 9. PACKING

9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in SCC and in any subsequent instructions ordered by the Purchaser.

## 10. DELIVERY AND DOCUMENTS

10.1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in the Notification of Award. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC.

## 11. INSURANCE

11.1 The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in SCC.

## 12. TRANSPORTATION

12.1 DELETED

12.2 DELETED

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

12.4 DELETED

13. INCIDENTAL SERVICES

13.1 The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC without any extra cost paid for the services :

- (a) Performance or supervision of the on-site assembly and/or start-up of the supplied Goods;
- (b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods
- (c) Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied Goods.
- (d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) Training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation maintenance and/or repair of the supplied Goods.

13.2 Prices charged by the Supplier for incidental services, if not included in the Contract Price for the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

14. SPARE PARTS

14.1 As specified in the SCC, the Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier.

- (a) such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) In the event of termination of production of the spare parts:
  - (i) advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
  - (ii) following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.

15. WARRANTY

15.1 The Supplier warrants that the Goods supplied under this Contract are new, unused, of the most recent or current models and those they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except when the design and/or material is required by the Purchaser's Specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.

- 15.2 This warranty shall remain valid for **12(Twelve) months** after the Goods or any portion thereof as the case may be, have been delivered to and accepted and installed at the final destination indicated in the Contract, or for **18(Eighteen) months** after the date of shipment from the place of loading whichever period concludes earlier, unless specified otherwise in the SCC.
- 15.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.
- 15.4 Upon receipt of such notice, the Supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective Goods or parts thereof, without cost to the Purchaser other than, where applicable, the cost of inland delivery of the repaired or replaced Goods or parts from ex-works or ex-factory or ex-showroom to the final destination.
- 15.5 If the Supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.
16. PAYMENT
- 16.1 The method and conditions of payment to be made to the Supplier under this Contract shall be specified in the SCC.
- 16.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the contract.
- 16.3 Payments shall be made promptly by the Purchaser but in no case later than sixty (60) days after submission of the invoice or claim by the Supplier.
- 16.4 Payment shall be made in Indian Rupees.
17. PRICES
- 17.1 Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid, with the exception of any price adjustments authorized in SCC or in the Purchaser's request for bid validity extension, as the case may be.
18. CHANGE ORDERS
- 18.1 The Purchaser may at any time, by written order given to the Supplier pursuant to GCC Clause 32, make changes within the general scope of the Contract in any one or more of the following:
- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
  - (b) The method of shipping or packing;
  - (c) The place of delivery; and/or
  - (d) The Services to be provided by the Supplier.
- 18.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustments under this clause must be asserted within thirty (30) days from the date of Supplier's receipt of the Purchaser's change order.
19. CONTRACT AMENDMENTS

19.1 Subject to GCC Clause 18, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

## 20. ASSIGNMENT

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

## 21. SUBCONTRACTS

21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

21.2 Subcontracts must comply with the provisions of GCC Clause 3.

## 22. DELAYS IN THE SUPPLIER'S PERFORMANCE

22.1 Delivery of the goods and performance of the services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in the Schedule of Requirements.

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

22.3 Except as provided under GCC Clause 25, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 23, unless an extension of time is agreed upon pursuant to GCC Clause 22.2 without the application of liquidated damages.

## 23. LIQUIDATED DAMAGES

23.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the Percentage specified in SCC. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause 24.

## 24. TERMINATION FOR DEFAULT

24.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:

- (a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 22, or
- (b) If the Supplier fails to perform any other obligation(s) under the Contract.
- (c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this clause:

“Corrupt Practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

“fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

24.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 24.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of Contract to the extent not terminated.

## 25. FORCE MAJEURE

25.1 Notwithstanding the provisions of GCC Clause 22, 23, 24, the supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

25.2 For purpose of this Clause, “Force Majeure” means an event beyond the control of the Supplier and not involving the Supplier’s fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

25.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as it’s reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

## 26. TERMINATION FOR INSOLVENCY

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

## 27. TERMINATION FOR CONVENIENCE

27.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, or in the part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser’s convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

27.2 The Goods that are complete and ready for shipment within 30 days after the Supplier’s receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:

- (a) to have any portion completed and delivered at the Contract terms and prices; and/or
- (b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and for materials and parts previously procured by the Supplier.

## 28. SETTLEMENT OF DISPUTES



- 28.1 The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 28.2 If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.
- 28.2.1 Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.
- 28.2.2 Arbitration proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.
- 28.3 Notwithstanding any reference to arbitration herein,
- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
  - (b) the Purchaser shall pay the Supplier any monies due to Supplier.

## 29. LIMITATION OF LIABILITY

- 29.1 Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to Clause 6,
- (a) the Supplier shall not be liable to the Purchaser, 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 Supplier to pay liquidated damages to the Purchaser; and
  - (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

## 30. GOVERNING LANGUAGE

- 30.1 The contract shall be written in English language. Subject to GCC Clause 30, English language version of the Contract shall govern its interpretation. All correspondence and documents pertaining to the Contract which are exchanged by the parties shall be written in the same language.

## 31. APPLICABLE LAW

- 31.1 The contract shall be interpreted in accordance with the laws of the Union of India.

## 32. NOTICES

- 32.1 Any notice given by one party to the other pursuant to this Contract shall be sent to other party in writing or by cable, telex or facsimile and confirmed in writing to the other party's address specified in SCC.
- 32.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

## 33. TAXES AND DUTIES.

- 33.1 Deleted.
- 33.2 Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser.

**SECTION – IV**

**SPECIAL CONDITIONS OF CONTRACT  
(SCC)**

**SECTION – IV**  
**SPECIAL CONDITIONS OF CONTRACT**

**TABLE OF CLAUSES**

Item No	Topic	Page No.
1.	Definitions (GCC Clause 1)	31
2.	Country of Origin (GCC Clause 3)	31
3.	Performance Security (GCC Clause 7)	31
4.	Inspections and Tests (GCC Clause 8)	32
5.	Packing (GCC Clause9)	32
6.	Delivery and Documents (GCC Clause 10)	32
7.	Insurance (GCC Clause 11)	32
8.	Incidental Services (GCC Clause 13)	33
9.	Spare Parts (GCC Clause 14)	33
10.	Warranty (GCC Clause 15)	33
11.	Payment (GCC Clause 16)	34
12.	Prices (GCC Clause 17)	34
13.	Sub-contracts (GCC Clause 21)	34
14.	Liquidated Damages (GCC Clause 23)	34
15.	Resolution of Disputes (GCC Clause 28)	34
16.	Notices (GCC Clause 32)	35
17.	Progress of Supply	35
18.	Services and Warehousing Facilities	36
19.	Quality Control	36
20.	Conditional Operation	36

**SECTION - IV**  
**SPECIAL CONDITIONS OF CONTRACT**

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the General Conditions is indicated in parentheses.

1. DEFINITIONS (GCC Clause 1)

(g) The Purchaser is:

**ADVANCED TECHNICAL TRAINING CENTRE,  
BARDANG, SINGTAM, EAST SIKKIM - 727134**

(h) “The Purchaser’s country” is INDIA.

(j) “The Supplier” means the individual or firm supplying the Goods and Services under this Contract.

2. DELETED

3. PERFORMANCE SECURITY (GCC Clause 7)

3.1 Within 15 days after the Supplier’s receipt of Notification of Award, the Supplier shall furnish performance Security to the Purchaser for an amount of 5% of the contract value, valid upto 60 days after the date of the completion of performance obligations including warranty obligations.

In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/replaced material shall be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value shall be extended 60 days over and above the extended warranty period.

3.2 Substitute Clause 7.3 (b) of the GCC by the following:

A cashier’s cheque or banker’s certified cheque or crossed demand draft or pay order drawn in favor of “**The Principal, ATTC**”.

3.3 Substitute Clause 7.4 of the GCC by the following:

The performance Security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier’s performance obligations, including the warranty obligation, under the contract.

3.4 Add as Clause 7.5 to the GCC the following:

In the event of any contract amendment, the Supplier shall, within 15 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the Contract, as amended for 60 days after the completion of performance obligations including warranty obligations.

4. INSPECTION AND TESTS (GCC Clause 8)

ATTC Bardang will require a inspection and demonstration of the equipments to be supplied to its technical personnel and the bidders must ensure that all equipments to be supplied are to be demonstrated. The demonstration will be held on the day of opening of the bid.

The Purchaser shall also inspect the goods supplied by the supplier at the time of the delivery and verify it. Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

5. PACKING (GCC Clause 9)

Add as Clause 9.3 of the GCC the following:

Packing Instructions: The Supplier will be required to make separate packages for each Consignee. Each package will be marked on three sides with proper paint/indelible ink, the following:

i) Project ii) Contract No. iii) Country of Origin of Goods iv) Supplier's Name, and v) Packing list reference number.

6. DELIVERY AND DOCUMENTS (GCC Clause 10)

Upon dispatch of the Goods, the supplier shall notify the Purchaser, the Consignee and the insurance company by cable/telex/fax the full details of the shipment including contract number, railway receipt number and date, description of goods, quantity, name of the consignee etc. The supplier shall mail the following documents to the Purchaser with a copy to the insurance company:

- (i) 6 Copies of the Supplier's invoice showing contract number, goods' description, quantity, unit price, total amount;
- (ii) Railway receipt/acknowledgment of receipt of goods from the consignee(s)
- (iii) 6 Copies of packing list identifying the contents of each package;
- (iv) Correspondence informing Insurance Co.;
- (v) Manufacture's/Supplier's warranty certificate;
- (vi) Inspection Certificate issued by the nominated inspection agency, and the Supplier's factory inspection report; and
- (vii) Certificate of Origin

The above documents shall be received by the Purchaser, the Consignee and the insurance company before arrival of the Goods, and if not received, the supplier will be responsible for any consequential expenses.

7. INSURANCE (GCC Clause 11)

For delivery of goods at site, the insurance shall be obtained by the Supplier in an amount equal to **110 %** of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes.

8. INCIDENTAL SERVICES (GCC Clause 13)

Apart from the services mentioned in GCC Clause 13 following services shall be furnished and the cost shall be included in the contract price:

- (a) Performance or supervision of the on-site assembly and/or start-up of the supplied Goods;
- (b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods
- (c) Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied Goods.
- (d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time covering the **WARRANTY** period, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) Training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation maintenance and/or repair of the supplied Goods.
- (f) The Supplier shall arrange all materials tools and plants etc. and labour and install/fix the equipment/goods at all sites of Consignees.
- (g) The Supplier shall demonstrate the full functioning of the equipment/goods supplied at each Consignees' site. To do this the Supplier shall arrange all materials which are required in demonstrating full and satisfactory functioning and performance of the equipment/goods supplied at all sites of Consignees.

9. SPARE PARTS (GCC Clause 14)

Add as Clause 14.2 to the GCC the following:

Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.

10. WARRANTY (GCC Clause 15)

(i) GCC Clause 15.2:

In partial modification of the provisions, the warranty period shall be **12 (Twelve)** months from date of acceptance and installation of goods or **18 (Eighteen)** months from the dates of Shipment, whichever occurs earlier. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or part, the Supplier shall at its discretion either:

- (a) make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests in accordance with SCC 4;
- (b) pay liquidated damages to the Purchaser with respect to the failure to meet the contractual guarantees. The rate of these liquidated damages shall be (10%) as specified in Technical Specifications.

(ii) Substitute Clause 15.4 of the GCC by the following:

“Upon receipt of such notice, the Supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever, shall lie on the Purchaser for the replaced parts/goods thereafter.

In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/replaced material shall be extended to a further period of 12 months.”

(iii) GCC Clauses 15.4 and 15.5:

The period for correction of defects in the warranty period is 15 days from the date of written complain to supplier by Purchaser.

11. PAYMENT (GCC Clause 16)

Payment for Goods and Services shall be made in Indian Rupees as follows:

- (i) *On Delivery*: **80 (Eighty)** percent of the contract price shall be paid on receipt of goods and upon submission of the documents specified in SCC Clause 6 above; and
- (ii) *On final Acceptance*: the remaining **20 (Twenty)** percent of the Contract Price shall be paid to the supplier within 45 days after the date of the acceptance certificate issued by the Purchaser’s representative for the respective delivery.

12. PRICES (GCC Clause 17)

17.1 Prices payable to the supplier as stated in the contract shall be firm during the performance of the contract.

13. SUB – CONTRACTS (GCC Clause 21)

Add at the end of GCC sub-clause 21.1 the following:

Sub-contract shall be only for bought-out items and sub-assemblies

14. LIQUIDATED DAMAGES (GCC Clause 23)

14.1 For delays :

GCC Clause 23.1 – The applicable rate is **0.5% per week** and the maximum deduction is **10%** of the Contract Price. The Contract Price is the total price including services, taxes, duties, freight, insurance and packing charges.

15. RESOLUTION OF DISPUTES (Clause 28)

The dispute resolution mechanism to be applied pursuant to GCC Clause 28.2.2 shall be as follows :

- (a) In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Indian Council of Arbitration.
- (b) In the case of dispute with a Foreign Supplier, the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules. The Arbitral Tribunal shall consist of three Arbitrators one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so

appointed by the Parties, and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Indian Council of Arbitration.

- (c) If one of the party fails to appoint its arbitrator in pursuance of sub-clause (a) and (b) above, within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the Indian Council of Arbitration/The International Centre for Alternative Dispute Resolution (India), both in cases of the Foreign Supplier as well as Indian Supplier shall appoint the arbitrator. A certified copy of the order of the Indian Council of Arbitration, making such an appointment shall be furnished to each of the parties.
- (d) Arbitration proceedings shall be held at Gangtok, Sikkim, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
- (e) The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.
- (f) Where the value of the contract is Rs.10 million and below, the disputes or differences arising shall be referred to Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority namely the Indian Council of Arbitration.

16. NOTICES (Clause 32)

For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.

Purchaser: ADVANCED TECHNICAL TRAINING CENTRE,  
BARDANG, SINGTAM, EAST SIKKIM - 737134

Supplier: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

17. Supplier shall regularly intimate progress of supply, in writing to the Purchaser as under\*:

- Quantity offered for inspection and date;
- Quantity accepted/rejected by inspecting agency and date;
- Quantity dispatched/delivered to consignees and date;
- Quantity where incidental services have been satisfactorily completed with date;
- Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date;
- Date of completion of entire Contract including incidental services, if any; and
- Date of receipt of entire payments under the Contract  
(in case of stage-wise inspection, details required may also be specified.)



18. SERVICES AND WAREHOUSING FACILITIES

- 18.1 The following information must be furnished by the Bidder regarding facilities for after-sales service available in India particularly in Gangtok (Sikkim), Kolkata and Siliguri (West Bengal) :
- i. In support of similar types of Goods having been sold earlier by the Bidder in India, the model number and details of the Customers to whom the Goods were sold, should be furnished as required in Section XI.
  - ii. Whether trained engineers are available at the Services Centers either with the Firm or with their Agents to attend to after-sale problems and, if so the location where these engineers are available in the Company must be provided in Section XV.
  - iii. If reply to (ii) above is in negative, the full details of the nature of after-sale service proposed to be provided by the Bidder during the warranty period and later.
19. Quality control systems adopted by the Bidder should be supported by certification of standards of quality, if any, given by nationally/internally accepted standardization agencies such as Bureau of Indian Standards, ISO etc.. The products/services quoted must be ISO/BIS certified, wherever such certification is available.
20. If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the equipment proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such equipment until rectification of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

## **SECTION - V**

# **SCHEDULE OF REQUIREMENTS**

**PACKAGE – MODROB/2019/1**

Bid No. : ATTC/MODROB/2020/1  
Bid Security : Rs. 20,000/-  
Delivery Period : One (1) month from the date of issuance of Letter of Order.  
Installation : Within 10 days of the date of delivery  
Consignee : Advanced Technical Training Institute,

**SPECIFICATIONS**

**MODULAR MANUFACTURING SYSTEM**

<b>S.N</b>	<b>Name of the equipment</b>	<b>Quantity</b>
1	FEEDER STATION	1no
2	INSPECTION STATION	1no
3	BUFFER STATION	1no
4	PROCESS STATION	1no
5	SORTING STATION	1no
6	PLC software and cable accessories	1no
7	Assembly Template	1no
8	Technical Document	1set

**SECTION - VI**

**TECHNICAL SPECIFICATIONS**

## **PACKAGE – MODROB/2020/1**

### **01. INTRODUCTION**

ATTC Bardang is in the process of modernizing its existing laboratories through the MODROB scheme of AICTE.

The procurement of goods is to be executed by the ATTC, Bardang, Singtam, East Sikkim

### **02. SCOPE OF WORK**

#### **GENERAL SPECIFICATIONS:**

1. The Mechatronics system kit shall be of sleek design and portable one with castor wheels
2. Provided with standard Aluminum based mounting board (modular type) with all stations so as to make the mounting of components easier
3. All the products to be provided with suitable one touch fittings.
4. All the components used shall be of reputed make and the Vendor shall specify the make and submit the proposal with complete technical catalogue
5. Vendor to provide the learning resources –Pneumatics, electro pneumatics, programmable logic controllers
6. Operation & maintenance manual to be supplied - 2 hard copies and 1 soft copy with the equipment's

#### **LEARNING OBJECTIVES:**

1. To build a Mechatronics system for industrial scenarios
2. To understand the concepts of technology like Mechanics, Pneumatics, Electrical, Sensors, PLC controls, Communication interfaces
3. Mechanical set up of a station
4. To learn about Pneumatic linear and rotary drives
5. To understand concept of Vacuum Technology
6. Selection of sensors for various applications
7. Material handling techniques like conveyor, linear or rotary pick and place units
8. PLC programming using Ladder Logic
9. Fault finding techniques

*The scope of work of the supplier shall include, but not limited to the following:*

Design, Development, Manufacture, Inspection, Supply, Installation, Testing, Commissioning and acceptance test, Warranty maintenance, Training for personnel for the Mechatronics system Lab(**Package MODROB/2020/1**)

## **FEEDER STATION**

The Feeder Station should be possible to separate the components from the Stack Magazine and distribute the components one by one via rotary pick and place module for further processing. The Station should be consist of the following major parts

- Dispensing module
- Rotary Pick and Place module
- Horizontal Profile Table work bench with castor wheels
- PLC Board
- Control Console
- I/O Interface Module
- Valve manifold

The Dispensing module should separate the jobs stacked in magazine tube with the help of pneumatic cylinder and provisions should be made for detecting the availability of jobs with optical sensors. Rotary Pick and Place module should have a rotary actuator with an arm and suction cup to pick up work pieces and relocate them to positions from '0 degree to 180 degrees' on horizontal plane, so as to feed the subsequent stations. The end position of all pneumatic actuators should be detected by using Magnetic sensors.

The feeder station should consist of aluminum anodized profile table, filter regulator and lubricator unit with pressure gauge, solenoid valve, one touch fittings mounted with suitable mountings for easy assembly and disassembly.

Networking and signaling the subsequent station for further processing should be done by establishing I/O communication between the PLC's of subsequent stations. The PLC used for the station should be capable of handling digital inputs and outputs, and it should have Ethernet interface to communicate with PC for programming

**Scope of supply:**

S. No	Item with description	Qty
1.	Horizontal Aluminum profile table: a. (L x W x H)- 540 x 640 x 790mm b. Aluminum profile Table top profile – 40 x 160 mm Supporting profile- 40 x 40 mm c. Grid spacing( From slot to slot) – 40mm d. Profile groove width – 8.3mm e. Leveling casters for quick setting and smooth movement f. Profile plate connectors: Length 55 mm, thickness5mm Mounting method M6 Socket head screw with M6 hammer head nut	1
2.	I/O Interface module: a. 25 Pin D-Sub connector interface board for interfacing valves and actuators b. 25 Pin D-Sub cable for transferring the I/O to the terminals which in turn are to be connected to PLC	1
3.	Valve Manifold: a. L x W x H : 60 X 26.5 X 65 mm b. Grid spacing – 19mm c. Mountable valve port size1/8” d. Provided with Conical silencers for reducing the dB level of exhausted air e. 5/2 Double solenoid pilot operated valve: Material- Extruded aluminum with an iodized Finish Size – 1/8 ” Design – Spool type Pressure range – 2 – 10 bar Flow rate – 450 l / min Manual override- Resetting Fitted with 1/8” flow control valve for varying the flow	1
4.	Filter Regulator Combination with Lubricator (FRL Unit) with pressure gauge and start up valve: a. Port size -1/4inch b. Flow rate – 500l/min c. Maximum supply pressure – 10bar d. Operating pressure- 6bar e. Filtering element grade – 40 µm f. Minimum operating flow – 12l/min g. Filter Bowl capacity – 9ml h. Lubricator Bowl capacity – 20 ml i. Connection for tube 8 dia input and 8 dia output j. Mounting – Socket head cap screw with M6 hammer head nut	1
5.	Stack Magazine module: a. Comprising of Miniature cylinder of dia 25 and stroke 80 mm Height: 516 mm, Width: 125 mm and Length: 390mm b. Magnetic sensor for position sensing c. Light barrier Module :Type : Infra -red Sensing range:2m Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current, Switch output: PNP, normally open/normally Output Protection: Protected against false pulse on closed contact	1

	power- up, short-circuit protected	
6.	<p>Transfer Module :</p> <ul style="list-style-type: none"> <li>a. Cylinder rotation angle (rotary cylinder fitted with shock absorbers),180 degrees (freely selectable)</li> <li>b. Compact guided cylinder dia 40 mm, Stroke - 50mm</li> <li>c. Height: 325.5 mm, Width: 127 mm, Length: 223mm</li> <li>d. Vacuum gripper module capable of handling100gm</li> <li>e. Magnetic sensor for position sensing</li> </ul>	1
7.	<p>Control console:</p> <ul style="list-style-type: none"> <li>a. Cycle start push button –Green with illuminated</li> <li>b. Auto /Manual selector switch-Black</li> <li>c. Home position push button –Red with illuminated</li> <li>d. Emergency button-Red</li> </ul>	1
8.	<p>Cable duct and accessories:</p> <ul style="list-style-type: none"> <li>a. Wire duct size45x25</li> <li>b. Fastening screws</li> </ul>	
9.	<p>Work piece Set:</p> <p>Contains 18 approved work pieces of diameter 40 mm and height 25 mm 6 rejected work pieces of diameter 40 mm and height 23.5 in every material made of Aluminum, Delrin and Hylum respectively</p>	1
10.	<p>PLC control panel with S7 1200 PLC:</p> <ul style="list-style-type: none"> <li>a. Power supply: Input voltage :230/115 V AC (47 – 63 Hz), Output voltage: 24 VDC ,short-circuit-proof Output current: Maximum 3A</li> <li>b. Miniature circuit breaker DC voltage with max.5A current rating</li> <li>c. Digital inputs-14,Digital outputs 10, Analog inputs 2Ethernet interface 1 x TCP/IP, 10Mbit/s</li> <li>d. Terminal blocks</li> <li>e. 25pin D-sub I/O data cable length 1.5 m, wire used 0.25mm<sup>2</sup></li> <li>f. Cable ducts</li> <li>g. Power Connection cable:3pin plug with length of1.3m</li> </ul>	1



## INSPECTION STATION

The Inspection station should be possible to measure the height of the components received from its downstream station and transfer the correct and incorrect components to appropriate slides. The Inspection station should consist of the following major parts

- Measuring module
- Horizontal Profile Table work bench with castor wheels
- PLC Board
- Control Console
- I/O interface module
- Valve manifold
- Slide module

Measuring module should check the jobs for height of about 25 mm using analog sensors and provisions should be made to detect work piece availability with the help of optical or capacitive sensors. An arrangement is to be provided to transfer the right work piece by a slide to the next station and send faulty rejected work piece to the rejection bay.

The inspection station should consist of aluminum anodized profile table, filter regulator and lubricator unit with pressure gauge, solenoid valve, one touch fittings mounted with suitable mountings for easy assembly and disassembly

Networking and signaling the subsequent station for further processing should be done by establishing I/O communication between the PLC's of subsequent stations. The PLC used in this station should be capable of handling various digital inputs/ outputs and analog inputs, and it should have Ethernet interface to communicate with PC for programming

**Scope of supply:**

S. No	Item with description	Qty
1.	Horizontal Aluminum profile table: a. (L x W x H)- 540 x 640 x 790mm b. Aluminum profile Table top profile – 40 x 160 mm Supporting profile- 40 x 40 mm c. Grid spacing( From slot to slot) – 40mm d. Profile groove width – 8.3mm e. Leveling casters for quick setting and smooth movement f. Profile plate connectors: Length 55 mm, thickness 5mm Mounting method M6 Socket head screw with M6 hammer head nut	1
2.	I/O Interface module: a. 25 Pin D-Sub connector interface board for interfacing valves and actuators b. 25 Pin D-Sub cable for transferring the I/O to the terminals which in turn are to be connected to PLC	1
3.	Valve Manifold: a. L x W x H : 60 X 26.5 X 65 mm b. Grid spacing – 19mm c. Mountable valve port size 1/8" d. Provided with Conical silencers for reducing the dB level of exhausted air e. 5/2 Double solenoid pilot operated valve: Material- Extruded aluminum with anodized Finish Size – 1/8 " Design – Spool type Pressure range – 2 – 10 bar Flow rate – 450 l / min Manual override- Resetting Fitted with 1/8" flow control valve for varying the flow	1
4.	Filter Regulator Combination with Lubricator (FRL Unit) with pressure gauge and start up valve: a. Port size -1/4inch b. Flow rate – 500l/min c. Maximum supply pressure – 10bar d. Operating pressure- 6bar e. Filtering element grade – 40 µm f. Minimum operating flow – 12l/min g. Filter Bowl capacity – 9ml h. Lubricator Bowl capacity – 20 ml i. Connection for tube 8 dia input and 8 dia output j. Mounting – Socket head cap screw with M6 hammer head nut	1
5.	Measuring module: a. Pneumatic Linear Drive of dia 25mm and Stroke 100mm b. LVDT with signal conditioner: Maximum permissible applied voltage - 42V Output: 4 – 20 mA Overall length – 94.4 mm c. Diffuse Sensor: Type :Infra red Sensing range: 15mm Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current Switch output: PNP, normally open/normally closed contact	1

	Output Protection: Protected against false pulse on power-up, short-circuit protected	
6.	Approve and rejection Slide Module	1
7.	Control console: a. Cycle start push button –Green with illuminated b. Auto /Manual selector switch-Black c. Home position push button –Red with illuminated d. Emergency button-Red	1
8.	Cable duct and accessories: a. Wire duct size45x25 b. Fastening screws	1
9.	PLC control panel with S7 1200 PLC: a. Powersupply:Inputvoltage:230/115VAC(47–63Hz),Outputvoltage:24VDC ,short-circuit-proof Output current: Maximum 3A b. Miniature circuit breaker DC voltage with max.5A current rating c. Digital inputs-14,Digital outputs 10, Analog inputs 2Ethernet interface 1 x TCP/IP, 10 M bit/s d. Analogue module: Analogue input(4-20mA) e. Terminal blocks f. 25pin D-sub I/O data cable length 1.5 m, wire used 0.25mm <sup>2</sup> g. Cable ducts h. Power Connection cable:3pin plug with length of1.3m	1

## **BUFFER STATION**

Buffer Station should ensure steady flow of components to the process station by allowing one component at a time for processing. It should be able to store up to 5 work pieces at a time and if the count has exceeded 5, it should communicate with the upstream stations to hold the supply of the job until there is a demand from the downstream station.

Buffer Station consists of the following

- Conveyor module
- Horizontal Profile Table work bench with castor wheels
- PLC Board
- Control Console
- I/O interface module
- Valve manifold

Buffer station should be capable of buffering up to 5 jobs. Buffering process should be controlled by a separator using upstream and downstream photo electric sensors. Retro reflective sensor is to be used to detect the inserted job and keep tag on the numbers of jobs buffered precisely while the separator module passes the job to the next station, if the transfer point is free. The buffer station should wait for the signal from the downstream station for transferring the job. The end position of all pneumatic actuators is detected by using Magnetic sensors.

The buffer station consists of aluminum anodized profile plate, filter regulator and lubricator unit with pressure gauge, on/off valve quick push connections and couplings mounted with suitable mountings for easy assembly and disassembly.

Conveyor module should be driven by DC motor along with the driver unit which has provisions to change the speed, the direction of rotation and other functions. A retro reflective sensor should be provided at the beginning of the conveyor to detect the presence of job. Pneumatically actuated separator module should be provided for performing the buffer action. Through beam sensor to be provided for subtracting the count after the work piece has reached the separator module. Diffuse sensor should be used to detect the presence of object between the separator module.

Networking and signaling the subsequent station for further processing should be done by establishing I/O communication between the PLC's of subsequent stations. The PLC used in this station should be capable of handling various digital inputs/ outputs, and it should have Ethernet interface to communicate with PC for programming

**Scope of supply:**

<b>S. No</b>	<b>Item with description</b>	<b>Qty</b>
1.	Horizontal Aluminum profile table: a. (L x W x H)- 540 x 640 x 790mm b. Aluminum profile Table top profile – 40 x 160 mm Supporting profile- 40 x 40 mm c. Grid spacing( From slot to slot) – 40mm d. Profile groove width – 8.3mm e. Leveling casters for quick setting and smooth movement f. Profile plate connectors: Length 55 mm, thickness5mm Mounting method M6 Socket head screw with M6 hammer head nut	1
2.	I/O Interface module: a. 25 Pin D-Sub connector interface board for interfacing valves and actuators b. 25 Pin D-Sub cable for transferring the I/O to the terminals which in turn are to be connected to PLC	1
3.	Valve Manifold: a. L x W x H : 60 X 26.5 X 65 mm b. Grid spacing – 19mm c. Mountable valve port size1/8” d. Provided with Conical silencers for reducing the dB level of exhausted air e. 5/2 Double solenoid pilot operated valve: Material- Extruded aluminum with anodized Finish Size – 1/8 ” Design – Spool type Pressure range – 2 – 10 bar Flow rate – 450 l / min Manual override- Resetting Fitted with 1/8” flow control valve for varying the flow	1
4.	Filter Regulator Combination with Lubricator (FRL Unit) with pressure gauge and start up valve: a. Port size -1/4inch b. Flow rate – 500l/min c. Maximum supply pressure – 10bar d. Operating pressure- 6bar e. Filtering element grade – 40 µm f. Minimum operating flow – 12l/min g. Filter Bowl capacity – 9ml h. Lubricator Bowl capacity – 20 ml i. Connection for tube 8 dia input and 8 dia output j. Mounting – Socket head cap screw with M6 hammer head nut	1
5.	Conveyor Module: a. Flat belt conveyor with overall length of500mm b. Conveyor to be driven by 24V DC motor of reputed make c. Conveyor to be provided with electronic drive unit for regulating the speed, reversing the direction and other function d. Separator Module: Comprising of 2 pneumatic cylinders of dia 25 mm and stroke 25mm e. Retro reflective -Photo electric sensor(Upstream): I. Type :Infrared II. Sensing range:2m	1

	<ul style="list-style-type: none"> <li>III. Supply Voltage and Current: 10 to 30V DC (10% max.ripple)</li> <li>IV. @20mA max current</li> <li>V. Switch output: PNP, normally open/normally closed contact</li> <li>VI. Output Protection: Protected against false pulse on power-up, short circuit protected</li> </ul> <ul style="list-style-type: none"> <li>a. Thru beam -Photo electric sensor(Downstream): <ul style="list-style-type: none"> <li>I. Type :Infrared</li> <li>II. Sensing range:2m</li> <li>III. Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current</li> <li>IV. Switch output: PNP, normally open/normally closed contact</li> <li>V. Output Protection: Protected against false pulse on power-up, short-circuit protected</li> </ul> </li> <li>b. Diffuse Sensor - Photo electric : <ul style="list-style-type: none"> <li>I. Type :Infrared</li> <li>II. Sensing range:15mm</li> <li>III. Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current</li> <li>IV. Switch output: PNP, normally open/normally closed contact</li> <li>V. Output Protection: Protected against false pulse on power-up, short-circuit protected</li> </ul> </li> </ul>	
6.	<p>Control console:</p> <ul style="list-style-type: none"> <li>a. Cycle start push button –Green with illuminated</li> <li>b. Auto /Manual selector switch-Black</li> <li>c. Home position push button –Red with illuminated</li> <li>d. Emergency button-Red</li> </ul>	1
7.	<p>Cable duct and accessories:</p> <ul style="list-style-type: none"> <li>a) Wire duct size45x25</li> <li>b) Fastening screws</li> </ul>	1
8.	<p>PLC control panel with S7 1200 PLC:</p> <ul style="list-style-type: none"> <li>a. Powersupply:Inputvoltage:230/115VAC(47–63Hz),Outputvoltage:24VDC ,short-circuit-proof Output current: Maximum 3A</li> <li>b. Miniature circuit breaker DC voltage with max.5A current rating</li> <li>c. Digital inputs-14,Digital outputs 10, Analog inputs 2Ethernet interface 1 x TCP/IP, 10 Mbit/s</li> <li>d. Terminal blocks</li> <li>e. 25pin D-sub I/O data cable length 1.5 m, wire used 0.25mm<sup>2</sup></li> <li>f. Cable ducts</li> <li>g. Power Connection cable:3pin plug with length of1.3m</li> </ul>	1

## **PROCESS STATION**

The Process Station should be possible to demonstrate drilling operation on a pneumatically driven rotary indexing table and transfer the work piece via Pick and place module to downstream Station. The Process Station should be consist of the following

- Rotary Indexing table module
- Drilling module
- Linear Pick and Place module
- Horizontal Profile Table work bench with castor wheels
- PLC Board, Control Console, I/O interface module
- Valve manifold

The processing station should be capable of demonstrating drilling operation using a pneumatically driven drilling machine for jobs placed on pneumatically operated rotary indexing table. A pneumatic linear drive module should move the drill unit up and down. Provisions should be made to sense the presence of the incoming work piece in order to proceed with further operation. The station should be provided with linear pick and place module to transfer the job to the next station.

The rotary indexing table should be driven by a pneumatic cylinder to index the jobs at an angle of 60 degrees/each time. Aluminum anodized plate can be mounted on top of the rotary indexing table with a provision to sense the presence of the incoming work piece in order to proceed with further operation. Drilling module should consist of a drilling machine and the up and down movement of the drilling machine should be carried out using pneumatic linear drive unit. The transfer of work piece to the subsequent station should be done by a linear pick and place unit with vacuum cups as the end effectors. The end position of all pneumatic actuators is detected by using Magnetic sensors.

Networking and signaling the subsequent station for further processing should be done by establishing I/O communication between the PLC's of subsequent stations. The PLC used in this station should be capable of handling various digital inputs/ outputs, and it should have Ethernet interface to communicate with PC for programming

**Scope of supply:**

<b>S. No</b>	<b>Item with description</b>	<b>Qty</b>
1.	Horizontal Aluminum profile table: a. (L x W x H)- 540 x 640 x 790mm b. Aluminum profile Table top profile – 40 x 160 mm Supporting profile- 40 x 40 mm c. Grid spacing( From slot to slot) – 40mm d. Profile groove width – 8.3mm e. Leveling casters for quick setting and smooth movement f. Profile plate connectors: Length 55 mm, thickness 5mm Mounting method M6 Socket head screw with M6 hammer head nut	1
2.	I/O Interface module: a. 25 Pin D-Sub connector interface board for interfacing valves and actuators b. 25 Pin D-Sub cable for transferring the I/O to the terminals which in turn are to be connected to PLC	1
3.	Valve Manifold: a. L x W x H : 60 X 26.5 X 65mm b. Grid spacing – 19mm c. Mountable valve port size 1/8" d. Provided with Conical silencers for reducing the dB level of exhausted air e. 5/2 Double solenoid pilot operated valve: Material- Extruded aluminum with anodized Finish Size – 1/8 " Design – Spool type Pressure range – 2 – 10 bar Flow rate – 450 l / min Manual override- Resetting Fitted with 1/8" flow control valve for varying the flow	1
4.	Filter Regulator Combination with Lubricator (FRL Unit) with pressure gauge and start up valve: a. Port size -1/4inch b. Flow rate – 500l/min c. Maximum supply pressure – 10bar d. Operating pressure- 6bar e. Filtering element grade – 40 µm f. Minimum operating flow – 12l/min g. Filter Bowl capacity – 9ml h. Lubricator Bowl capacity – 20 ml i. Connection for tube 8 dia input and 8 dia output j. Mounting – Socket head cap screw with M6 hammer head nut	1
3.	Rotary indexing table module: a. Pneumatically driven rotary indexing table capable of handling load upto 50kg b. Indexing table to be driven by cylinder of Ø 40 x 75mm c. Indexing angle 60degrees d. Indexing plate diameter-320mm e. Diffuse Sensor :Type : Infrared Sensing range: 15mm Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current Switch output: PNP, normally open/normally closed contact Output Protection: Protected against false pulse on power-up, short-circuit protected	1



4.	<p>Drilling Module:</p> <p>a. Drilling machine to be mounted on pneumatic linear drive of stroke 100mm</p> <p>b. Pneumatic drilling machine: No-load Speed : 3000 rpm, Weight : 1.4Kg</p>	1`
5.	<p>Pick and Place module</p> <p>a. Rod less cylinder – dia 25 mm x 250 mm stroke</p> <p>b. Aluminum profile pillar – 80 x 80mm</p> <p>c. Rod less cylinder mounting profile- 40 x 40mm</p> <p>d. Twin rod cylinder- 15 mm stroke length</p> <p>e. Vacuum gripper with suction pad</p>	1
6.	<p>Control console:</p> <p>a. Cycle start push button –Green with illuminated</p> <p>b. Auto /Manual selector switch-Black</p> <p>c. Home position push button –Red with illuminated</p> <p>d. Emergency button-Red</p>	1
7.	<p>Cable duct and accessories:</p> <p>a. Wire duct size45x25</p> <p>b. Fastening screws</p>	1
8.	<p>PLC control panel with S7 1200 PLC:</p> <p>a. Powersupply:Inputvoltage:230/115VAC(47–63Hz),Outputvoltage:24VDC ,short-circuit-proof Output current: Maximum 3A</p> <p>b. Miniature circuit breaker DC voltage with max.5A current rating</p> <p>c. Digital inputs-14,Digital outputs 10, Analog inputs 2Ethernet interface 1 x TCP/IP, 10 Mbit/s</p> <p>d. Terminal blocks</p> <p>e. 25pin D-sub I/O data cable length 1.5 m, wire used 0.25mm<sup>2</sup></p> <p>f. Power Connection cable:3pin plug with length of1.3m</p>	1

## **SORTING STATION**

Sorting Station should be possible to sort the incoming work piece based on colour and material characteristics to appropriate slides. The Sorting Station consists of the following

- Sorting Conveyor module
- Horizontal Profile Table work bench with castor wheels
- PLC Board
- Control Console
- I/O interface module
- Valve manifold
- Slide module

The sorting station should have 3 slides to sort the incoming jobs based on its material and color. The conveyor module should be fitted with sensors to sense the presence of jobs at the start of the conveyor. Inductive sensors and colour sensors to be used to detect whether the material is metallic or non-metallic & its colour respectively, and divert them to the appropriate slides. A pneumatically actuated sorting arrangement is to be provided to extend for pushing the work pieces onto the appropriate slides.

The station should consist of anodized profile table, filter regulator and lubricator unit with pressure gauge, on/off valve quick push connections and couplings mounted with suitable mountings for easy assembly and disassembly.

The conveyor module should have DC motor driven conveyor belt which shall carry the job to the appropriate location on the station while the inductive and color sensor detect the material and color of the jobs carried along the conveyor. The pneumatically operated sorting guides to be provided to sort the work pieces into various slides as per colors and material. The presence of the work piece in the station is to be detected using diffuse sensor. The end position of all pneumatic actuators should be detected by using Magnetic sensors.

Networking and signaling the subsequent station for further processing should be done by establishing I/O communication between the PLC's of subsequent stations. The PLC used in this station should be capable of handling various digital inputs/ outputs, and it should have Ethernet interface to communicate with PC for programming

**Scope of supply:**

S. No	Item with description	Qty
1.	Horizontal Aluminum profile table: a. (L x W x H)- 540 x 640 x 790mm b. Aluminum profile Table top profile – 40 x 160 mm Supporting profile- 40 x 40 mm c. Grid spacing( From slot to slot) – 40mm d. Profile groove width – 8.3mm e. Leveling casters for quick setting and smooth movement f. Profile plate connectors: Length 55 mm, thickness5mm Mounting method M6 Socket head screw with M6 hammer head nut	1
2.	I/O Interface module: a. 25 Pin D-Sub connector interface board for interfacing valves and actuators b. 25 Pin D-Sub cable for transferring the I/O to the terminals which in turn are to be connected to PLC	1
3.	Valve Manifold: a. L x W x H : 60 X 26.5 X 65mm b. Grid spacing – 19mm c. Mountable valve port size1/8” d. Provided with Conical silencers for reducing the dB level of exhausted air e. 5/2 Double solenoid pilot operated valve: Material- Extruded aluminum with anodized Finish Size – 1/8 ” Design – Spool type Pressure range – 2 – 10 bar Flow rate – 450 l / min Manual override- Resetting Fitted with 1/8” flow control valve for varying the flow	1
4.	Filter Regulator Combination with Lubricator (FRL Unit) with pressure gauge and start up valve: a. Port size -1/4inch b. Flow rate – 500l/min c. Maximum supply pressure – 10bar d. Operating pressure- 6bar e. Filtering element grade – 40 µm f. Minimum operating flow – 12l/min g. Filter Bowl capacity – 9ml h. Lubricator Bowl capacity – 20 ml i. Connection for tube 8 dia input and 8 dia output j. Mounting – Socket head cap screw with M6 hammer head nut	1
5.	Sorting Conveyor Module: a. Flat belt conveyor with overall length of500mm a. Conveyor to be driven by 24V DC motor of reputed make b. Conveyor to be provided with electronic drive unit for regulating the speed, reversing the direction and other functions b. Comprising of 2 pneumatic cylinders of dia 25 mm and stroke 40mm Sorting slides for collecting the work piece on appropriate slides c. Color Sensor: a. Sensing range:15mm b. Supply Voltage and Current: 10 to 30V DC (10% max.ripple) c. Switch output: PNP, normally open/normally closed contact d. OutputProtection:Protectedagainstfalsepulseonpower-up,short-circuit	1

	<ul style="list-style-type: none"> <li>protected</li> <li>e. Output rating : 100 mA</li> <li>d. Proximity sensor: <ul style="list-style-type: none"> <li>a. Type - Cylindrical inductive type</li> <li>b. Supply voltage -12 – 24VDC</li> <li>c. Sensing range – 8 mm</li> </ul> </li> <li>e. Diffuse Sensor: <ul style="list-style-type: none"> <li>a) Type :Infra-red</li> <li>b) Sensing range:15mm</li> <li>c) Supply Voltage and Current: 10 to 30V DC (10% max. ripple) @ 20 mA max current</li> <li>d) Switch output: PNP, normally open/normally closed contact</li> <li>e) Output Protection: Protected against false pulse on power-up, short-circuit protected</li> </ul> </li> </ul>	
6.	Control console: <ul style="list-style-type: none"> <li>a. Cycle start push button –Green with illuminated</li> <li>b. Auto /Manual selector switch-Black</li> <li>c. Home position push button –Red with illuminated</li> <li>d. Emergency button-Red</li> </ul>	1
7.	Cable duct and accessories: <ul style="list-style-type: none"> <li>a. Wire duct size45x25</li> <li>b. Fastening screws</li> </ul>	1
8.	PLC control panel with S7 1200 PLC: <ul style="list-style-type: none"> <li>a Powersupply:Inputvoltage:230/115VAC(47–63Hz),Outputvoltage:24VDC ,short-circuit-proof Output current: Maximum 3A</li> <li>b Miniature circuit breaker DC voltage with max.5A current rating</li> <li>c Digital inputs-14,Digital outputs 10, Analog inputs 2Ethernet interface 1 x TCP/IP, 10 Mbit/s</li> <li>d Terminal blocks</li> <li>e 25pin D-sub I/O data cable length 1.5 m, wire used 0.25mm<sup>2</sup></li> <li>f Cable ducts</li> <li>g Power Connection cable:3pin plug with length of1.3m</li> </ul>	1

## **PLC SOFTWARE AND ACCESSORIES**

1. PLC software should be supplied with floating license
2. PLC Software and Programming cable should be compatible with PLC used in the above stations for programming and real time communication
3. Programming software should support various programming languages like ST, FBD, Ladder..etc.,
4. Ethernet cable should be supplied with the length of 2mtr for connecting PLC to PC for programming and other communications

### **Scope of supply**

1.	PLC programming cable for connecting to PC	1
2.	PLC Programming software	1

### **Assembly Templates**

Should contain assembly templates required for the assembly of respective station and for the different combination functions. It should be made up of plain anodized Aluminum sheet with handle

### **Technical Document**

Main technical document shall contain the details for the assembly of all the five stations in different combination functions. It shall include positional sketch and installation procedure etc.

## **Simulation software for Multi Technologies – 1 User**

Simulation software shall be possible to create and simulate the circuits allied with the technologies such Pneumatics, Hydraulics, electrical, PLC, Digital Electronics etc. All technologies shall be linked together, and component interactions should be seen during simulation to create complete systems which reinforce students understanding of system's interactions.

It shall be possible to easily reproduce any lab equipment or complete system to simulate, analyze and troubleshoot them before the hands-on experience.

The Hydraulic Library shall comply with ISO 1219-1 and 1219-2 standards, the Hydraulic Library (industrial and proportional) shall offer the entire component symbols required to create mobile and industrial hydraulic systems and functions. Components should be preconfigured. Moreover simulation parameters such as performance curves, external loads, leaks, viscosity, and thermal characteristics shall be configured as needed.

The Pneumatic Library shall include symbols complying with ISO 1219-1 and 1219-2 standards to create pneumatic, electro pneumatic and logic systems. The parameters of pneumatic components should also be configurable.

PLC Ladder Logic libraries shall contain Allen Bradley™, Siemens™ and IEC61131-3 to create and simulate the control part of an automated system.

Digital electronics library shall have standard devices including inverters, logic gates, flip-flops, counters, shift registers, comparators, switches, LEDs, 7-bar display, decoders, multiplexers, etc.

Electrical one line library shall enable the design of diagrams for all voltage levels in a typical one-line representation of networks for power generation, transmission and distribution.

Electro technical Library shall offer a wide array of components to create AC and DC electrical circuits, from basic to advanced uses. It should also support IEC and NEMA standards. Motor soft starters and variable frequency drives should be available. It shall offer components built according to the real model from manufacturers such as Siemens™, Allen Bradley™, etc. Tools shall be available to quickly implement and design entire scaled cabinets and junction boxes. A rail mounting for assembly grouping as well as ducting elements for wires should be available.

Electrical Controls Library shall interact with all components from other libraries so as to create electrically controlled systems. It shall also support IEC and JIC standards.

The Sequential Function Chart (SFC) Module should be the tool of choice to implement control structures. In addition to macro-steps, it shall include encapsulating steps enabling hierarchical order.

The 2D / 3D HMI module shall provide mechanism to easily create animated shapes and control panels that reproduce the behavior of the equipment they represent.

Control panel module shall allow to easily create control panels and to operate the virtual system or real equipment.

Component sizing module shall provide calculation worksheets specific to each category of pneumatic, hydraulic and electrical components which include calculation tools necessary for component sizing. Users shall have quick access to applicable equations and parameter definitions.

The software shall enable users to export SFC / GRAFCET into XML format or into Siemens STEP 7 Graph in order to program the Siemens S7-300 Series PLC.

Simulation software shall allow easily creating or reproducing assignments and learning material, adapting it to the teaching curriculums.

The software shall offer teachers and students an expansive library with preconfigured components of reputed manufacturer.

It shall be possible for online remote access license connection for teachers and students. It should allow preparing and simulating the courses and homework from home, school or workplace.

Course material should be available for each technology. It shall provide teachers and trainers with the essentials for preparing course curriculum. It shall have guides, manuals, lectures, videos and lab notes for all levels of discipline.

Teach ware should be made using multimedia sequences; course content offered shall be interactive and animated live by the software simulation. Teachers shall modify this content to better fit their needs.

The Workflow shall allow defining interactive activities for existing projects and connecting them to other applications. It should also automate repetitive tasks without programming knowledge.

The software shall include a 3D editor for creating and importing 3D parts in STEP, STL and IGES. It shall also possible to visualize, simulate and animate them, simultaneously, with the technologies that drive the system.

The software shall include a Mechanism Manager, mechanical bodies shall be linked to Fluid Power actuators to simulate and animate their effects.

In addition to the above features, the software shall have following also

- Measuring instruments such as multimeter, clamp-meter, oscilloscope, hydraulic tester, thermometer
- Create or activate pre-defined failures to develop troubleshooting skills
- Create libraries containing only the required components to specific exercises
- Train with ready-to-use components from Manufacturers' Catalogues
- Remote access capabilities for E-learning
- Creating digital twins of your hardware equipment
- Virtual Systems: conveyor, traffic lights, elevator, car wash, pick & place, etc.
- International standards including ISO, IEC, NEMA, SAE, JIC, etc.
- Connecting to real devices such as PLCs, Arduino™, CANdevices
- Connecting to Trainer kits and Mechatronics systems through IO card and OPC
- Establishing SIL & HIL connection with physical hardware
- Plotting simulated parameters to monitor and visualize system's behavior

### **Following libraries shall contain in the package:**

- Hydraulics & Proportional Hydraulics
- Pneumatics & Proportional Pneumatics
- Component Sizing Module
- Mechanical links
- Electrical Control
- Electromechanical (A.C., D.C., **Motor Control**)
- One-Line Electro technical Diagram
- PLC, Allen Bradley™
- PLC, Siemens™
- PLC, IEC 1131-3
- PLC, LSIS
- HMI 2D/3D & Control Panel
- SFC Grafset IEC 61131
- Digital Electronics
- Diagnostics & Trouble shooting
- Embedded View and Sequence Diagram
- Bill of Materials (BOM) & Report Module
- OPC Client
- Block Diagram (Math) Workshop

#### **Package shall include:**

1. Software on USB or Download Link, 1 Protection Device(USB)
2. Annual Maintenance shall Include the following for first 1year
  - a. Software updates, service releases, new versions
  - b. Online training sessions (2 hrs)
  - c. Unlimited access to technical support
  - d. Manufacturers catalogues
  - e. Remote access licensing (WAN1) for its period of validity
  - f. Teachware (Hydraulics, Pneumatics, Electrical)
  - g. Access to already made exercise using Unity3D

#### **04.15 COMPLETION PERIOD**

The entire work covering design, engineering, manufacture, testing, inspection, delivery of equipment, installation, commissioning and acceptance test of the equipments should be completed within 30(Thirty) days from the date of letter of Award of Contract.

#### **04.16 WARRANTY MAINTENANCE**

Warranty maintenance for all the equipment's specified in the technical specification shall commence from date of acceptance after successful of completion of acceptance test. Warranty maintenance (as per GCC 15.2) shall be provided for all the items specified in the technical specification. All updates/development on the same model of equipments during warranty period shall be supplied free of charge.

#### **04.17 ANNUAL MAINTENANCE CONTRACT**

On expiry of the warranty maintenance the Purchaser may enter into an agreement of on-site comprehensive Annual Maintenance Contract of the equipments with the supplier. Hence it is mandatory to quote for Annual Maintenance charges for each of the equipments to be supplied  
*Bid Document for Supply, Installation, Testing and Commissioning of Flexible Manufacturing System Lab Equipment for Advanced Technical Training Centre, Bardang, East Sikkim under MODROB*



under this contract documents by the supplier. The supplier should also mention the service network offices in the Eastern Region and minimum time required to turning up for maintenance on giving call from the Purchaser.

#### **04.18 TRAINING**

The supplier shall provide operational training minimum for 2 (Two) persons to be nominated by the Purchaser at site for a period of minimum 5 (Five) days after successful installation & commissioning.

#### **04.19 SPARES & CONSUMABLE**

The supplier as per the requirement during installation shall provide all commissioning spares, accessories, consumables as required for successful commissioning of the equipments.

#### **04.20 COMPLETENESS**

Any equipment/material/component, which may not be specially mentioned but are necessary for carrying out the contract work are in the scope of supply for the supplier and the equipments must be complete in all respects with guaranteed performance and designated functions as per the Technical specification and approved documents.

#### **04.21 DOCUMENTATION**

The following document shall be furnished for approval :

##### **During Bid & Basic Engineering/offer stage :**

- Machine configuration, General arrangement drawing, Assembled and production drawing of the Engines, Schematic drawing with BOM etc, giving details of the machine dimensions, weights, loads, foundation bolts with detailed layout and dimensions including Bill of quantities.
- Single line diagram for power supply load requirement to Equipments and earthing details.

##### **At Detail engineering stage :**

- Machine installation manuals providing step – by – step procedure for installation of the equipments.
- Site preparation manual providing details of space, flooring, ceiling height, temperature, humidity, storage, power requirement etc.
- Operator’s manual explaining the engineering philosophy behind the equipment design and procedure for operating the equipment.
- Student’s workbook, reference workbook for purpose of training of students.
- Thermal load, running and start – up power requirement, environmental condition (both storage and running) including electromagnetic interface and vibration in the building for each equipment.
- Safety manuals containing all the safety procedures relating to use of the equipment. Detailed procedure to recover in case of certain preliminary failure within the Engines.

#### **04.11 GENERAL**

The supplier shall be responsible for the following also:

- a) Drive motors shall have thermal overload/low voltage relay for motor protection with generous design and high factor of safety of carious other parts.

- b) The equipment shall be complete with standard accessories, and conform to accuracy as per latest IS codes of practice.
- c) The equipment shall be of good finish and high quality with good paint job and chrome finish wherever applicable.
- d) Preparation and submission of all relevant drawings and documents for information/approval by the consultant and purchaser.
- e) Purchaser will have an option of purchasing the latest machine at the time of approval of above specification; it will be the obligation of the Supplier to bring to notice the latest information on product available along with their recommendations.
- f) Test certificates of respective manufacturer and details of test procedures shall be furnished
- g) The functional responsibility of the project also includes collection and measurement all data required from the site for various functions.

## **SECTION VI-A**

### **QUALIFICATION CRITERIA**

1. Bidder must have supplied, installed and commissioned satisfactorily of at least 5 (Five) Nos. of such Training Systems/Equipment specified in the schedule of requirement in any of the last three years.
2. The bidder should furnish the information on all past supplies and satisfactory performance for in program under Section XI.
3. Bids submitted shall submit the following information:-
  - (i) Copies of original documents defining the constitution or legal status, place of registration and principle place of business of the company or firm or partnership, etc.
  - (ii) The bidder should furnish a brief write-up, backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the supply of the required systems and equipment within the specified time of completion after meeting all their current commitments.
  - (iii) Details of Service Centers and information on service support facilities that would be provided after the warranty period.
  - (iv) Reports on financial standing of the Bidder such as profit and loss statements, balance sheets and auditor's report for the past three years, banker's certificates, etc.

## **SECTION - VII**

# **BID FORM AND PRICE SCHEDULE**

**SECTION VII**

**BID FORM**

Date: \_\_\_\_\_

Package No: \_\_\_\_\_

IFB No.: \_\_\_\_\_

TO: (Name and address of Purchaser)

Gentlemen and/or Ladies:

Having examined the Bidding Documents including Addenda Nos. .... *[insert numbers]*, the receipt of which is hereby duly acknowledged, we the undersigned, offer to supply and deliver ..... *(Description of Goods and Services)* in conformity with the said bidding documents for the sum of ..... *(Total bid amount in words and figures)* or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this bid.

We undertake, if our bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our bid is accepted, we will obtain the guarantee of a bank in a sum equivalent to .... Percent of the Contract price for the due performance of the Contract, in the form prescribed by the Purchaser.

We agree to abide by this bid for the Bid validity period specified in Clause 16.1 of the Bid Data Sheet and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Amount	Rupees				
Name and address of agent		Purpose of gratuity	of	Commission	of

(if none, state "none")

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We understand that you are not bound to accept the lowest or any bid you may receive.

We clarify/confirm that we comply with the eligibility requirements as per ITB Clause 2 of the bidding documents.

Dated this ..... day of ..... 20....

\_\_\_\_\_  
*(Signature)*

\_\_\_\_\_  
*(in the capacity of)*

Duly authorized to sign Bid for and on behalf of \_\_\_\_\_

**PRICE SCHEDULE**

1 Schedule No.	2 Item Description	3 Country of Origin	4 Quantity & Unit	5 Price for each Unit					6 Unit Price	Total Price	GST and other taxes payable if contract is awarded
				Ex-factory Ex-Warehouse Ex-Showroom Off-the-shelf	Excise duty, if any	Packing & forwarding	Inland transportation, insurance and other local costs incidental to delivery	Incidental services as listed in Clause 8 of SCC			
				(a)	(b)	(c)	(d)	(e)	a+b+c+d+e	4 x 6	
1.	Basic Equipment										
2.	Accessories, Spares & Consumable										
3.	Commission ing Spares										
4.	2 Years Spares for Operation & Maintenance										

Note:

- (a) In case of discrepancy between unit price and total price, the unit price shall prevail.

Total bid price in Rs. \_\_\_\_\_

In words \_\_\_\_\_

Signature of Bidder \_\_\_\_\_

Name \_\_\_\_\_

Business address \_\_\_\_\_

Place:

Date:

## **SECTION – VIII**

### **BID SECURITY FORM**

**SECTION - VIII**

**BID SECURITY FORM**

Whereas ..... (hereinafter called "the Bidder") has submitted its bid dated ..... (*date of submission of bid*) for the supply of ..... (*name and/or description of the goods*) (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE ..... (*name of bank*) of .....(name of country), having our registered office at ..... (*address of bank*) [hereinafter called "the bank"], are bound unto .....[name of the Purchaser](hereinafter called "the Purchaser") in the sum of \_\_\_\_\_ for which payment well truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_.

THE CONDITIONS of this obligation are:

1. If the Bidder
  - (a) withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
  - (b) does not accept the correction of errors in accordance with the ITB; or
2. If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity:
  - (a) fails or refuses to execute the Contract Form if required; or
  - (b) fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders;

we undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the purchaser will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including forty five (45) days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

.....  
(Signature of the Bank)

\_\_\_\_\_  
Name of Bidder

## **SECTION – IX**

# **CONTRACT FORM**

## **SECTION - IX**

*Bid Document for Supply, Installation, Testing and Commissioning of Flexible Manufacturing System Lab Equipment for Advanced Technical Training Centre, Bardang, East Sikkim under MODROB*



**CONTRACT FORM**

**THIS AGREEMENT** made the ..... day of ....., 20..... Between ..... (*Name of purchaser*) of ..... (*Country of Purchaser*) (*hereinafter "the Purchaser"*) of the one part and ..... (*Name of Supplier*) of ..... (*City and Country of Supplier*) *hereinafter called "the Supplier"*) of the other part :

**WHEREAS** the Purchase is desirous that certain Goods and ancillary services viz., ..... (Brief Description of Goods and Services) and has accepted a bid by the Supplier for the supply of those goods and services in the sum of ..... (Contract Prize in words and Figures) (*hereinafter called "the Contract Price"*)

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and constructed as part of this Agreement, viz.,
  - [a] the Bid Form and the Price Schedule submitted by the Bidder;
  - [b] the Schedule of Requirements;
  - [c] the General Conditions of Contract
  - [d] the Special Conditions of Contract; and
  - [e] the Purchaser's Notification of Award
3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the goods and services and to remedy defects herein in conformity in all respects with the provisions of the Contract.
4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the Contract prices or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

Brief particulars of the goods and services which shall be supplied / provided by the Supplier are as under:

Sl.No.	Brief Description of Goods & Services	Quantity to be supplied	Unit Price	Total Price	Delivery Terms

**TOTAL VALUE :**

**DELIVERY SCHEDULE:**

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the

said ..... (For the Purchaser)

in the presence of .....

Signed, Sealed and Delivered by the

said ..... (For the Supplier)

in the presence of .....

## **SECTION - X**

# **PERFORMANCE SECURITY FORM**

**SECTION – X**

**PERFORMANCE SECURITY FORM**

To: \_\_\_\_\_ (Name of Purchaser)

**WHEREAS** ..... (Name of Supplier)

Hereinafter called “the Supplier” has undertaken, in pursuance of Contract No ..... dated, .....20 .... To supply ..... (Description of Goods and Services) hereinafter called “the Contract”.

**AND WHEREAS** it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier’s performance obligations in accordance with the Contract.

**AND WHEREAS** we have agreed to give the Supplier a Guarantee;

**THEREFORE** we hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of ..... (Amount of Guarantee in Words and Figures) and we under take to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the .....day of .....20.....

Signature and Seal of Guarantors

.....

Date ..... 20.....

Address: .....

.....

## **SECTION – XI**

# **PERFORMANCE STATEMENT**

**SECTION - XI**

[Please see Clause 13.3 (b) (ii) of Instructions to Bidders]

Proforma for Performance Statement (for a period of last three/five years)

Bid No. \_\_\_\_\_ Date of opening \_\_\_\_\_ Time \_\_\_\_\_ Hours  
Name of the Firm \_\_\_\_\_

---

<u>Order placed By (full address Of Purchaser)</u>	<u>Order No. and date</u>	<u>Description and quantity of ordered equipment</u>	<u>Value of order</u>	<u>Date of completion of delivery</u>		<u>Remarks indicated reasons for late delivery, if any</u>	<u>Has the equipment been satisfactorily functioning? (Attach a certificate from The Purchaser/Consignee)</u>
1	2	3	4	As per Contract	Actual	7	8

---

Signature and seal of the Bidder \_\_\_\_\_  
\_\_\_\_\_

**SECTION XII**

(Please see Clause 13.3(a) of Instructions to Bidders)

**MANUFACTURERS AUTHORIZATION FORM**

No. \_\_\_\_\_ dated \_\_\_\_\_

To

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dear Sir:

IFB No. \_\_\_\_\_

We \_\_\_\_\_ who are established and reputable manufacturers of \_\_\_\_\_ (*name and description of goods offered*) having factories at \_\_\_\_\_ (*address of factory*) do hereby authorize M/s \_\_\_\_\_ (*Name and address of Agent*) to submit a bid, and sign the contract with you for the goods manufactured by us against the above IFB.

No company or firm or individual other than M/s \_\_\_\_\_ are authorized to bid, and conclude the contract for the above goods manufactured by us, against this specific IFB.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract and Clause 10 of the Special Conditions of contract for the goods and services offered for supply by the above firm against this IFB.

Yours faithfully,

(Name)

(Name of manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to legally bind the manufacturer. It should be included by the Bidder in its bid.

**SECTION - XIV**

**DELETED**



**ANNEXURE - XV**

**PROFORMA FOR EQUIPMENT AND QUALITY CONTROL EMPLOYED BY THE  
MANUFACTURER**

BID NO ..... DATE OF OPENING: .....

NAME OF THE BIDDER: .....

(Note: All details should related to the manufacture for the items offered for supply)

1. Name & full address of the Manufacturer
2. (a) Telephone & Fax No Office/Factory/Works  
(b) Telex No. Office/Factory/Works  
(c) Telegraphic address:
1. Location of the manufacturing factory.
2. Details of Industrial License, wherever required as per statutory regulations.
3. Details of important Plant & Machinery functioning in each dept. (Monographs & description pamphlets be supplied if available).
4. Details of the process of manufacture in the factory.
5. Details & stocks of raw materials held.
6. Production capacity of item(s) quoted for, with the existing Plant & Machinery
  - 6.1 Normal
  - 6.2 Maximum
7. Details of arrangement for quality control of products such as laboratory, testing equipment etc.
8. Details of staff:
  - 8.1 Details of technical supervisory staff in charge of production & quality control.
  - 8.2 Skilled labor employed.
  - 8.3 Unskilled labor employed.
  - 8.4 Maximum No. of workers (skilled & unskilled) employed on any day during the 18 months preceding the date of Tender.
9. Whether Goods are tested to any standard specification? If so, copies of original test certificates should be submitted in triplicate.
10. Are you registered with the Directorate General of Supplies and Disposals, New Delhi 110001, India? If so, furnish full particulars of registration, period of currency etc. with a copy of the certificate of registration.

.....  
Signature and seal of the Manufacturer