Republic of the Philippine
TARLAC STATE UNIVERSITY
Romulo Blvd., San Vicente, Tarlac City
Tel. No.: (045) 982 4630
Website: www.tsu.edu.ph

Bidding Documents

(This Bidding Documents is in conformance with the Sixth Edition of the Philippine Bidding Documents for the Procurement of Goods)

For the Project

Improving the Teaching and Learning of Engineering and Technology Programs through Upgrading of Facilities to Produce Graduates with Technical Skills Aligned with the Requirements of Industry 4.0

With an Approved Budget for the Contract (ABC) *of* Ten Million Pesos (₱ 10,000,000.00)

Invitation to Bid No. 2020-029

July 2020
6th Edition

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Glossary of Acronyms, Terms, and Abbreviations

ABC – Approved Budget for the Contract.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender.* (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

CDA - Cooperative Development Authority.

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

CIF – Cost Insurance and Freight.

CIP – Carriage and Insurance Paid.

CPI – Consumer Price Index.

DDP – Refers to the quoted price of the Goods, which means "delivered duty paid."

DTI – Department of Trade and Industry.

EXW – Ex works.

FCA – "Free Carrier" shipping point.

FOB – "Free on Board" shipping point.

Foreign-funded Procurement or Foreign-Assisted Project– Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

Framework Agreement – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as "Call-Offs," are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term "related" or "analogous services" shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

GPPB – Government Procurement Policy Board.

INCOTERMS – International Commercial Terms.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

Supplier – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

UN – United Nations.

Section I. Invitation to Bid

Republic of the Philippine
TARLAC STATE UNIVERSITY
Romulo Blvd., San Vicente, Tarlac City
Tel. No.: (045) 982 4630
Website: www.tsu.edu.ph

INVITATION TO BID

For the Project

Improving the Teaching and Learning of Engineering and Technology Programs through Upgrading of Facilities to Produce Graduates with Technical Skills Aligned with Industry 4.0

Invitation to Bid No.2020-029

1. The Tarlac State University, through the Trust Fund intends to apply the sum of **Ten Million Pesos (₱ 10,000,000.00)** being the Approved Budget for the Contract (ABC) to payments under the contract for the project: **Improving the Teaching and Learning of Engineering and Technology Programs through Upgrading of Facilities to Produce Graduates with Technical Skills Aligned with Industry 4.0**. Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The Tarlac State University now invites bids for the project: **Improving the Teaching and Learning of Engineering and Technology Programs through Upgrading of Facilities to Produce Graduates with Technical Skills Aligned with Industry 4.0**. Delivery of the Goods is required within **thirty (30) calendar** days from the receipt of the Notice to Proceed. Bidders must have completed, within the last five (5) years prior to the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II. Instructions to Bidders.

3. Bidding will be conducted through open competitive bidding procedures using a non-discretionary "pass/fail" criterion as specified in the 2016 Revised Implementing Rules and Regulations (IRR) of Republic Act (RA) 9184, otherwise known as the "Government Procurement Reform Act".

   Bidding is restricted to Filipino citizens/sole proprietorships, partnerships, or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines, and to citizens or organizations of a country the laws or regulations of which grant similar rights or privileges to Filipino citizens, pursuant to RA 5183.

4. Interested bidders may obtain further information from **Tarlac State University** and inspect the Bidding Documents at the address given below during Tuesday to Friday from 8:00 A.M. to 5:00 P.M:

> **BAC Secretariat**
> Gender and Development Building
> Tarlac State University
> Romulo Blvd., San Vicente, Tarlac City
> Tel. No. (045) 606-8142
> Email: bacsec@tsu.edu.ph

5. A complete set of Bidding Documents may be acquired by interested Bidders on **November 25 to December 15, 2020** from the aforementioned address upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of ₱ **10,000.00**.

   It may also be downloaded free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS) and the website of the Procuring Entity, provided that Bidders shall pay the applicable fee for the Bidding Documents not later than the submission of their bids.

6. The Tarlac State University will hold a Pre-Bid Conference **December 3, 2020 (2:00 P.M.)** at the **Business Center Audio-Visual Room, 2nd Floor, Business Center Bldg., Tarlac State University, Romulo Blvd., San Vicente, Tarlac City**, which shall be open to prospective bidders.

7. Bids must be duly received by the BAC Secretariat at the address below on or before **December 15, 2020 (2:00 P.M.)**. Late bids shall not be accepted.

> **BAC Secretariat**
> Gender and Development Building
> Tarlac State University
> Romulo Blvd., San Vicente, Tarlac City
> Tel. No. (045) 606-8142
> Email: **bacsec@tsu.edu.ph** / **jajimenez@tsu.edu.ph**

8. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in ITB Clause 14.

9. Bid opening shall be on **December 15, 2020, at 2:00 P.M.,** at the Business Center Audio-Visual Room, 2nd Floor, Business Center Bldg., Tarlac State University, Romulo Blvd., San Vicente, Tarlac City. Bids will be opened in the presence of the bidders' representatives who choose to attend at the address below.

10. The Tarlac State University reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 Revised IRR of RA 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

> Pedro G. Suerte Felipe, Jr.
> BAC Secretariat
> Gender and Development Building
> Tarlac State University
> Romulo Blvd., San Vicente, Tarlac City
> Tel. No. (045) 606-8142
> Email: **bacsec@tsu.edu.ph** / **jajimenez@tsu.edu.ph**

> CONSOLACION S. LAGMAN
> BAC Chairperson

Section II. Instructions to Bidders

1. Scope of Bid

1.1. The Tarlac State University wishes to receive Bids for the project: **Improving the Teaching and Learning of Engineering and Technology Programs through Upgrading of Facilities to Produce Graduates with Technical Skills Aligned with Industry 4.0**, with identification number **Invitation to Bid No. 2020-026**.

1.2. The procurement project (referred to herein as "Project"") is composed of one (1) lot with 5 items, the details of which are described in Section VII. Technical Specifications.

2. Funding Information

2.1. The GOP through the source of funding as indicated below for **2020** in the amount of **₱ 10,000,000.00**

2.2. The source of funding is the **Trust Fund**.

3. Bidding Requirements

3.1. The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

3.2. Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or IB by the BAC through the issuance of a supplemental or bid bulletin.

3.3. The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex "I" of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

5.2. Foreign ownership limited to those allowed under the rules may participate in this Project.

5.3. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder must have a SLCC that is similar to the Project, as described in the **BDS**, with a value, adjusted to current prices using the PSA's CPI, that is at least equivalent to fifty percent (50 %) of the ABC.

5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

7. Subcontracts

7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than twenty percent (20%) of the Project.

The Procuring Entity has prescribed that subcontracting is not allowed

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and at the address indicated in paragraph 6 of the **IB.**

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII. Checklist of Technical and Financial Documents**.

10.2. The Bidder's **SLCC** as indicated in **ITB** Clause 5.3 should have been completed **within five (5) years** prior to the deadline for the submission and receipt of bids.

10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

11. Documents comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII. Checklist of Technical and Financial Documents**.

11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.

11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

11.4. For Foreign-funded Procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

12. Bid Prices

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

a. For Goods offered from within the Procuring Entity's country:
   i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);

   ii. The cost of all customs duties and sales and other taxes already paid or payable;

   iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and

   iv. The price of other (incidental) services, if any, listed in e.

b. For Goods offered from abroad:

   i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.

   ii. The price of other (incidental) services, if any, as listed in **Section VII. Technical Specifications**.

13. Bid and Payment Currencies

13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

13.2. Payment of the contract price shall be made in Philippine Pesos.

14. Bid Security

14.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.

14.2. The Bid and bid security shall be valid until **April 14, 2021**. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

15. Sealing and Marking of Bids

15.1. Each Bidder shall submit one copy of the first and second components of its Bid.

15.2. The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

15.3. If the Procuring Entity allows the submission of bids through online submission or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

16.1. The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 7 of the **IB.**

17. Opening and Preliminary Examination of Bids

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

18. Domestic Preference

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*," using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 15 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items are indicated in **Section VII. Technical Specifications**, and the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.

19.4. The Project shall be awarded as one project having several items that shall be awarded as one contract.

19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

20. Post-Qualification

20.1. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

21. Signing of the Contract

21.1. The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

ITB Clause	
5.3	For this purpose, contracts similar to the Project shall be the supply and delivery of similar goods comprising the Project.
7.1	No further instructions.
12	The price of the Goods shall be quoted DDP Tarlac City, Philippines or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts: a. The amount of not less than **₱ 200,000.00** (2% of ABC), if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less than **₱ 500,000.00** (5% of ABC) if bid security is in Surety Bond.
19.3	No further instructions.
20.2	No further requirements.
21.2	No further requirements.

Section IV. General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract (SCC).**

2. Advance Payment and Terms of Payment

2.1. Advance payment of the contract amount is provided under Annex "D" of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

3. Performance Security

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than prior to the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184

4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC, Section IV. Technical Specifications** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

5. Warranty

5.1. In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

5.2. The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace

the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

6. Liability of the Supplier

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

Section V. Special Conditions of Contract

GCC Clause	

1	**Delivery and Documents –**
	
	For purposes of the Contract, "EXW," "FOB," "FCA," "CIF," "CIP," "DDP" and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows: The delivery terms applicable to this Contract are delivered to College of Engineering and Technology, Tarlac state University, Romulo Blvd., San Vicente, Tarlac City. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination.
	
	Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements).
	
	For purposes of this Clause the Procuring Entity's Representative at the Project Site is Dr. Miriam S. Galvez.
	
	Incidental Services
	The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements:
	
	    a. performance or supervision of 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 a detailed operations and maintenance manual for each appropriate unit of the 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 Procuring Entity's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.
	
	The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.
	
	Spare Parts
	The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:
	
	    a. such spare parts as the Procuring Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and
	
	    b. in the event of termination of production of the spare parts:
	
	        i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and
	
	        ii. following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested.

| | The spare parts and other components required are listed in **Section VI (Schedule of Requirements)** and the cost thereof are included in the contract price.

The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of [*indicate here the time period specified. If not used indicate a time period of three times the warranty period*].

Spare parts or components shall be supplied as promptly as possible, but in any case, within 1 month of placing the order.

Packaging
The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging 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.

The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified below, and in any subsequent instructions ordered by the Procuring Entity.

The outer packaging must be clearly marked on at least four (4) sides as follows:
Name of the Procuring Entity
Name of the Supplier
Contract Description
Final Destination
Gross weight
Any special lifting instructions
Any special handling instructions
Any relevant HAZCHEM classifications

A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging.

Transportation –

Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.

Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price. |
| | Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. |

	In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure. The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination. **Intellectual Property Rights** The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.
2.2	Payments shall be made only upon a certification by the HoPE to the effect that the Goods have been rendered or delivered in accordance with the terms of this Contract and have been duly inspected and accepted. Except with the prior approval of the HoPE no payment shall be made for services not yet rendered or for supplies and materials not yet delivered under this Contract. Ten percent (10%) of the amount of each payment shall be retained by the Procuring Entity to cover the Supplier's warranty obligations under this Contract.
4	The inspections and tests that will be conducted are end-user inspection and operational acceptance tests.

Section VI. Schedule of Requirements

The delivery date for the Goods covered by the Contract shall be within thirty (30) calendar days upon receipt of the Notice to Proceed.

Section VII. Technical Specifications

Item No.	Description		
1.	**Automatic Production Line Training Equipment** includes:		
	Training bench	1	set
	Feeding unit (vertical feed tube, topping cylinder, pusher cylinder, material detection sensor parts, installation rack, material detection device part, wiring terminal unit, etc.)	1	set
	Transmission unit (four freedom manipulator, linear transmission unit, proportional transmission mechanism, multi-function installation rack, synchronizing wheel, synchronizing belt, wiring terminal unit, etc.)	1	set
	Processing unit (sliding material platform, simulated punch, wiring terminal unit, etc.)	1	set
	Assembly unit (feeding mechanism, rotary feeding unit, manipulator assembly unit, wiring terminal unit)	1	set
	Sorting unit (conveyor mechanism, three phase motor power unit, sorting pneumatic components, sensor detection unit, precision feedback and positionzer mechanism, wiring terminal unit, etc.)	1	set
	Distribution box	1	set
	Servo (Panasonic permanent magnet synchronous AC servo motor, AC permanent magnet synchronous servo drive device as the movement control device of the manipulator)	1	set
	Three phase motor (mainly of motor and reduction gearbox, the gear ratio is 1:10)	1	set
	photoelectric sensor	7	pc
	photoelectric sensor	2	pc
	proximity sensor	1	pc
	Metal sensor	2	pc
	Fiber optic sensor	3	pc
	warming light	1	pc
	Manifold board	5	pc
	Double way electronic controlled valve with light	2	pc
	Single way electronic controlled valve with light	16	pc
	cylinder (Equipped with magnetic switch, installation rack)	18	pc
	Communication device	1	set
	Filter pressure relief Valve	1	set
	Solenoid valve components	5	set
	Power distribution system	1	set
	Air pump	1	set
	Wiring terminal block	5	set
	Control unit (consists of 3pcs indicator ,2pcs jog button, 1pc switch, 1pc emergency stop button)	5	pc
	PLC controller (PLC brand selectable)	1	set
	Workpiece (6 kinds, each in 5 pcs)	1	set
	Touch screen	1	set
	The Equipment must be Compliant to WorldSkills ASEAN Skills Standard		
	Equipment overview: The equipment is composed of feeding unit, processing unit, assembly unit, transmission unit and sorting unit. The electrical layout is in double-drawer; all electrical controllers are installed on the drawers, in accordance with the real industrial patterns. Each unit is an independent system, as well as an electromechanical system. The executive mechanism of each unit is mainly based on pneumatic execution, but the mechanical arm movement of transmission unit adopts servo motor driving and precise position control, the drive system has the features of long travel and multi positioning points. The conveyor belt drive of sorting unit adopts general frequency converter drive 3-phase asynchronous motor. The position control and frequency converter technology is the most widely used electrical control technology in modern industry.		
	Training contents: 1. It combines mechanical technology, sensor technology, AC motor variable frequency speed regulation and stepper motor drive control, touch screen technology, PLC control and communication network technology. Feeding unit installation and debugging; Processing unit installation and debugging; Assembly unit installation and debugging; Sorting unit installation and		

debugging; Transmission unit installation and debugging; Automatic production line control installation and debugging.

2. The whole structure is open, modules are replaced easily, the required modules can be selected conveniently for teaching and competition: Replace and expand working unit; Electrician is updated to field bus; Position module to control servo motor.

3. Used for teaching, complete the following tasks:

   1) Pneumatic system installation and debugging: Pneumatic direction control circuit installation; Pneumatic speed control circuit installation; Swing control circuit installation; Pneumatic sequence control circuit installation; Pneumatic mechanical arm installation; Pneumatic system installation and debugging; Pneumatic system design and installation.

   2) Electrical control circuit installation and PLC programming: 3-phase motor positive and reverse rotation control circuit connection and control programming; 3-phase motor control circuit connection and control programming; Motor speed control circuit connection and control programming; Frequency converter analogy control connection and control programming; Servo motor control circuit connection and parameter setting; PLC control network control technology; Pneumatic direction control programming; Pneumatic sequence control programming; Pneumatic mechanical arm control programming; Belt conveyor control programming; Electromechanical equipment control programming; Automatic production line control programming.

   3) PLC communication network installation, programming and debugging: PLC control technology---485 communication technology programming and debugging.

   4) Electromechanical equipment installation and debugging Transmission co-axiality adjustment; Feeding unit mechanical installation and adjustment; Processing unit mechanical installation and adjustment; Assembly unit mechanical installation and adjustment; Sorting unit mechanical installation and adjustment; Transmission unit mechanical installation and debugging; Automatic production line installation and debugging.

4. The equipment is used in assessment and competition: Mechanical parts assembly and adjustment capability; Electromechanical equipment installation and debugging capability; Circuit installation capability; Pneumatic system installation and debugging capability; Frequency converter automatic production line operating capability; Servo motor automatic production line operating capability; PLC analogy control in automatic production line operating capability; Electromechanical equipment control programming capability; Automatic control system installation and debugging capability. PLC network installation, programming and debugging capability; Human-machine interface, configuration technology programming and debugging capability.

Multi-Technology Design and Simulation Software, Single user license dongle
 	
This software contains libraries and modules for: Hydraulics, Pneumatics, components sizing-energy, bill of material and report, catalogue manager, Manufacturers' catalogues, Control panels and 2D-3D HMI, Teach ware-workflow, Didactic support SFC Compliers, Sequential function chart, Digital electronics, APISs/, Script language, PLC ladder logic, CAN bus, Block diagram-Math, Electrical Controls, Electro technical One-line, Electro technical, Mechanical
 	
Capabilities:
• Interactive lab exercise
 	
  These exercises include simple schematic that can be simulated and animated in order to be analyzed. Teachers can also modify these exercises and create ones.
 	
• Online remote Access Licensing
 	
  You can prepare and simulate your courses and homework from home, school or workplace.
• Teach ware
 	
  This software offers guides, lectures, animations and lab notes for all levels of discipline.
• Workflow
 	
  Allows teachers to create and sequence content in order to evaluate student's knowledge retention.
• Configuration tools
 	
  Allows you to create and configure valves, cylinders, motors etc. to obtain components which are graphically compliant with your requirements and respectful of real technical performance
• Create and customize your own symbols, libraries and templates
	2	pc

- Component sizing

  Provides calculation worksheets specific to each category of pneumatic, hydraulic and electrical components which include calculation tool necessary for component sizing.
- Adjustable component simulation parameters

  This includes parameters such as applied loads, dimensions angles, internal leakages, force, torque, etc.
- Dynamic, Realistic and Visual Simulation

  Accurately reproduce the system's behavior in a dynamic and visual way. During simulation, components are animated and lines and wires are color-coded according to their state
- Virtual System

  Using the electrical, PLC libraries and SFC/GRAFCET module, the student simply links sensors, switches, lights, conveyors, etc., in order to make the virtual systems operate according to teacher's instructions.
- 3D Editing and Animations

  Includes a 3D editor for creating and importing 3D parts in STEP, STL and IGES. It is possible to visualize, simulate, and animate them simultaneously with the technologies that drive the system
- Mechanical Links

  Mechanical bodies can be linked to fluid power actuators to simulate and animate their effects.
- Cross-section Animation
  Users can build cross-section animated views and link them to the simulation results in order to produce synchronized animations.
- System behavior analysis
  You can monitor and visualize simulation variables during simulation.

- Troubleshooting Modules

- Circuit Modification during Simulation
  Provides tools for disconnecting wires and pipes during simulation to isolate parts of a circuits, perform measurements and repair or replace components to fix suspected failures.
- Diagnostic Tools
  Provides extensive diagnostic tools allowing to detect inconsistencies or errors such as non-compliance with ISO standards, free connectors, redundant or overlapping lines, etc.
- Interfaces to programmable logic controllers and equipment

- Manufacturers' Catalogues
  Offering teachers and students an extensive library with thousands of preconfigured components that reproduce real world functions.
- CAN Bus Links to Operate Virtual Machines

- PLC Export

- Block Diagram
  It is possible to create a graphical environment for component and system modeling using predefined function blocks. It can also be used to create and test complete control loops.
- Sequential function charts

- HMI and Control Panels
  User can easily create animated shapes that reproduce the behavior of the equipment they represent.
- Electrical Controls
  Interacts with all components from other libraries so as to create electrically controlled systems.
- Electro technical

Offers wide array of components to create AC and DC electrical circuits, from basic to advanced uses. It supports IEC and NEMA standards. Motor soft starters and VFD's are available.

- Electro technical One-line
  Enables the design of diagrams for all voltage levels in a typical one-line representation of networks for power generation, transmission and distribution.
- Digital Electronics
  Includes standard devices such as inverters, logic gates, flip-flop, counters, shift registers, comparators, switches, LEDs, 7-bar display, decoders, multiplexers, etc.

- Programmable logic controller
  Offers PLC logic libraries for different brands of PLC
- Pneumatics
  Includes all the symbols necessary to create pneumatic, electro pneumatic and logic systems.
- Hydraulics
  Offers all component symbols required to create mobile and industrial hydraulic systems and functions.

Educational Edition
This Edition contains all the workshops and tools for the making of a project, including simulation and documentation of the entire system.

File Security
When a project is created in (extension PRX) a backup (extension BACKUP) shall be created. The current file is also automatically saved during regular intervals (extension AUTOSAVE).

Unit Systems
The software shall support both metric and imperial unit systems. At any time, during a session, the user can modify the unit type; the numeric value will be converted automatically.

Context Help and Help Guides
The following guides are included in the application: Installation and Administration, Basic User's Guide, Fluid Power, Electrotechnical, SFC-Grafcet, HMI, One-Line Diagram, Catalogue Manager, 3D Editor, OPC Module, API & Scripting Language and Workflow Manager. The User guides shall be available on the installation CD/DVD in PDF format.

General Interface
The software interface complies with Windows Ribbon standards and is consistent no matter what file/schematic is edited.

Workshops
Every workshop available shall allow the user to draw circuits using symbols from the library or products from Manufacturer Catalogues and to realistically simulate the corresponding technology with measurable values. Multi-technology simulation shall be available and transparent to the user.

Power Workshops
1.1. Hydraulics and Proportional Hydraulics
In conformity with the ISO 1219-1 and 1219-2 standards, the Hydraulic and Proportional Hydraulic libraries shall
offer all the symbols necessary for designing a hydraulic or electro hydraulic system. The libraries shall offer hundreds of symbols (components) including valves, variable displacement pumps and motors, which allow the creation of simple or advanced systems, such as open or closed loops. To avoid overloading the library, smart builder shall be available for Directional Valves, Cylinders, Reservoirs, Spool Position The symbols shall be pre-configured by default but can easily be sized to reproduce a specific behavior, taking into consideration pressures, flows, pressure losses, etc. Among the simulation parameters that can be configured, the user can apply loads, modify thermal behaviors, fluid viscosity and flow characteristics. To go along with the various component configurations, there are over 200 analog behaviors and over 1000 symbols. Mechanical transmission components such as motors, clutches, and gear boxes are also available in these workshops.

1.2 Pneumatics and Proportional Pneumatics

Includes all the symbols (components) needed to create Pneumatic, electro-pneumatic and pneumatic logic systems. Sequencer Builders are available. Like the Hydraulic workshop, the parameters of the pneumatic components can be configured to reproduce a realistic behaviour. To go along with the various component configurations, there are over 200 analog behaviours and over 1000 symbols. Mechanical transmission components, such as motors, clutches, and gear boxes are also available in this workshop.

1.3 Mechanism Manager

Mechanical bodies can be linked to Fluid Power actuators to simulate power transmission and dynamics and animate the kinematic diagram.

1.4 Electrotechnical (IEC and NEMA)

The software shall offer an extensive range of components allowing for the design of simple to complex Electrotechnical AC/DC circuits. Components' simulation parameters are also configurable. They include values of resistance, inductance, frequency, mutual inductance of a motor's rotor/stator, inertial constant, etc. To illustrate more complex concepts, the user can post various behaviors including speed, coupling, and mechanical power. The simulation and parameter settings of components and applied constraints to the system allow for the analysis and a better understanding of a behavior. There are more than 100 analog behaviors and over 500 symbols compliant the IEC and NEMA standards and functionalities. This allows the user to design schematics containing Electrotechnical controls, power components, terminal strips, cables, boxes, and panels.

1.5 One-Line Diagram (IEC and NEMA)

Allows creating, viewing, editing, and simulating single schematics of medium and high voltage systems in applications such as power generation, power transmission, and power distribution. All necessary components (generators, bars, transformers, network equipment, protection, loads, measuring instruments, etc.) are available. Assemblies allow the definition of cells. Each component includes properties and symbols that comply with the IEC and NEMA standards. Various diagnostic tools shall be available to verify component naming, equipotential uniformity, component connections, etc.

1.6 3D Editor

Allows creating and importing 3D parts in STEP, STL and IGES and linking them mechanically to create 3D systems. It is possible to visualize, simulate and animate them simultaneously with the technologies that drive the system.

1.7 API & Scripting

Allows implementing user's own functionality in order to automate different tasks routinely applied by overwriting or creating new functionalities, hence changing the way the software normally functions, to support expanding needs to interface with other systems such as ERP, 3D CAD, PDM, and LMS...

1.8 Workflow Manager

Allows the user to automate its procedural activities, to create workflows without having any background in computer
programming. This module is used to create didactic activities (exercise, Lab, evaluation,) on existing circuits.

Control Workshops and Modules

1.9 Electrical Controls (IEC and JIC)

This workshop interacts with components from other libraries for the creation of electrically controlled systems.
Includes switches, relays, solenoids, counters, push-buttons, and more.

1.10 Ladder Logic (PLC)

The software shall implement three Ladder Logic Libraries (or PLC – Programmable Logic Controller). These libraries contain instructions for Ladder Logic, such as contacts, input-output cards, timers, counters, math functions, etc. It shall be simple to conceive and simulate the control elements of an automated system.

Combined with other workshops, the Ladder Logic Libraries allow the user to create a complete virtual factory.

1.11 SFC - GRAFCET

Allows the user to implement control structures following the IEC-61131 standard with a specialized editor. This language can be used in combination with any other library. The SFC (Sequential Function Chart) – Grafcet allows a more effective approach to control systems. It also provides excellent support for project documentation relating to control systems, pneumatics, hydraulics, or electric as recommended by the ISO and IEC standards.

1.12 Digital Electronics

Offers the standard elements necessary for teaching basic logic, such as inverted circuits, logic gates (European and North-American Symbols), timers, counters, shift registers, comparators, interrupters, 7-segment decoders, multiplexers etc.).

HMI and Control Panels

Allows the easy creation of animated shapes (HMI – Human Machine Interface) and control panels. It reproduces full visual representation of a machine in 2D (synchronized animations with simulation). The movements and animation of all kinds are produced thank to simulator results and variable assignments. This module offers components such as switches, push buttons, potentiometers, measuring instruments, etc.).

Reports and Bill of Material

Specialized reports or Bills of Material in documents can be independently or directly inserted in the schematic. They allow the creation of BOM of all types, based on technical data, commercial information, or even personalized content.

Projects

1.13 Unit Systems

The software supports both metric and imperial units' system as well as conversion mechanisms between them.

1.14 Project Content

A project can include all documents and reports generated in by the software itself. Its structure includes sub-directories (multi-level). External documents can be attached to a project by hyperlinks.

1.15 Project Management and Project Explorer

A screen presents open projects in a Microsoft Windows like hierarchy, presentation, and navigation. From this window, it is possible to open, close, print documents, etc.

1.16 Trade Oriented Editors

Every workshop editor respects the Standards which apply to its technology. The Fluid power editor is regulated by ISO Standards but is not limited to it. The Electrical editors are regulated by IEC or NEMA (user choice). The SFC - Grafcet editor is regulated by IEC 1131 Standard.

1.17 Project History

The user can manage project's history and keep track of the revisions made.

1.18 Properties of Projects and Documents

Project and document properties can be managed using a dedicated tool in order to configure available parameters.

1.19 Project Templates

Templates of projects, schematics, and reports can be personalized by adding default attributes such as: Title Block, Bill of Material, Layers, Editing Options, and Personalized Information.

1.20 Standard Management

Standards can be defined at different hierarchical levels including: School, Class, Teachers, Students, projects, and documents. They can cover every aspect of a project for both technologies and documentation including: fluid, material, hoses, lines, wires, cables, connectors, font, colors, page layout, naming rules,

components, title block, component representation during editing and simulation, etc. Standards can be centralized in a common database shared by all users.

1.21 Multilingual Projects

A project integrated translation database shall manage all information required to switch the project from one language to another including texts, pictures, hyperlinks, audios and videos. The user simply chooses the active language and the software shalll automatically replace all corresponding information in the project with the equivalent ones found in the translation database. This new feature facilitates the transfer of the projects to foreign trainees or to colleagues or partners abroad.

1.22 SCORM Compliance

Shall allow the user to integrate into an existing Learning Management System (LMS) for interactive simulation.

Schematic Editor

1.23 User friendliness

All editors offer the same common functionalities without having to re-learn a new convention. For each editor, a fixed grid for symbols can be configured. The copy/paste or importation of images of type .JPG and .BMP is also possible.

1.24 Components insertion

The drawing of circuits is done with symbols from the libraries or products from manufacturer catalogues. Insertions and connection detections are made automatically by links already present in the schematic.

1.25 Symbol Appearance

Symbols can be mirrored, turned, rotated and enlarged. Attributes such as color and thickness can be modified according to predefined standards or forces manually.

1.26 Links

Jumping lines is done automatically and polyphase lines take shape instantly.

1.27 Diagnostic Edition Mode

Diagnostics concerning free connectors, non-assigned variables, identifier copies, direct connections, as well as detection tools for open ways, allow rapid indication of any error in the drawing or conception.

1.28 Layers

 The components can be placed on different layers.

Other Requirements and Specifications:

1.1 Assembly-Grouping

Groups and assemblies of components can be created for the purpose of manipulating multiple objects on the schematic or generating a report. Editing functions (add, delete and move components, modify component properties ...) can be used within an existing Assembly or Group, without having to Ungroup or Disassemble its components.

1.2 Embedding Component

An embedding component is a quick and easy way of merging parts of a circuit in order to simplify the circuit's representation. An embedding component can be configured and manipulated like any other component and can also be saved in a user-defined catalogue.

1.3 Information on the Schematic: Displayed Information
Different information linked to each component can be displayed on demand on the document or in the component's tooltip.

1.4 Formatting (text, fields, etc.)
Independent text fields can be added by the user. For all the posted texts, the format and alignment can be modified.

1.5 Drawing Tools

Coupled with the HMI workshop, these drawings allow components to be animated synchronously with the simulation.

1.6 Exportation and DXF format files opening

Documents can be exported in DXF, EMF, PDF, and TIFF formats. Files in DXF format can be opened.

1.7 SFC to Siemens Step 7 PLC Export

The SFC - Grafcet can be exported directly to Siemens TM Step 7 software.

1.8 Compatibility with Microsoft Software

User can directly copy and paste to/from Microsoft Word, Power Point, Excel, etc. Documents

1.9 Manipulation – Navigation

All classic functions, such as page layout, formatting, positioning, history of revisions, and automatic fields are available. Elements can be superimposed, ordered, aligned, distributed on a schematic and the sequence of layers can be modified by the user.

1.10 Revisions

Revision history for each document or for the entire project can be easily managed.

1.11 Title Blocks

Drawing tools and automatic fields allow the conception of title blocks to be used in model documents without having to restart from scratch.

1.12 Multi-document Circuits

If a circuit is large, it can be divided into several documents. Automatic references authorize simulation of an electric wire or line over multiple documents.

1.13 Printing Projects

Printing a project in part or in total can be done in editing mode and also in simulation mode with colors. Print preview shall be also available.

1.14 Find & Replace Text

This function allows to find text corresponding to Variables, Expressions, References and Accessories within the open project and replace it when the text content found allows the modification.

Component Libraries

1.15 Standards

The symbols found in the libraries respect international standards, such as IEC, NEMA, JIC, ISO. Some are manufacturer's standards.

1.16 Navigation/Organization

It is possible, with few mouse clicks, to access over 2500 symbols available in the library. The symbols are grouped by technology and function.

1.17 Configurators

Configurators allow the user to create complex components such as valves, cylinders, sequencers, tanks, pumps, etc. This greatly increases the number of components available. Manufacturers' Catalogues Manufacturers' catalogues have been developed. Each manufacturer product shall be pre-set and configured according to manufacturer specifications.

Personalized Libraries

1.18 Creation and Sharing

Personalized libraries can be created and shared on a network. They can also be password protected to avoid their modification.

1.19 Library Explorer

The Library Explorer manages the built-in libraries and also the personalized libraries created by the users. It is possible to insert grouped components in the libraries with variable assignments and re-use these components without having to reconfigure the variables.

Component Editor

1.20 Component Properties Window
Each component contains the same type of properties window. The properties are used for simulation (technical data), reports (catalogue information), or for communicating information (user properties defined by hyperlinks of other document types).

1.21 Component Tooltips
Detailed information can be displayed directly on the diagram or in tooltips displayed when hovering over the corresponding components on the screen (Text, video, sound, pictures and any kind of files can be launched from each component's tooltip.

1.22 Multi-selection: Editing Common Properties
In order to effectively edit multiple components in the schematic, it is possible to modify common properties simultaneously, rather than to do it one-by-one.

1.23 Component Sizing Module
Components such as pumps, motors, orifices, lines, accumulators, pistons, etc. shall have sizing sheets enabling the definition of optimal physical characteristics according to desired parameters. Mathematical formulas used by the simulator to calculate data shall also available. Users can create his calculation method based on existing equations.

1.24 Technical Data
The component's technical data shall serve as input data to the simulator. For some families of components, technical data shall be represented using either numerical values or characteristics curves, whichever suits better the corresponding mathematical models.

1.25 Data type
The component's technical data can be either constant specified by a numeric value (mass, diameter, resistance etc.) or variable characterized by a curve/signal (example: pressure loss in a valve, resistive force/torque in a motor) in time domain (evolution of room temperature). The method of creating variables via tables Y(X) allows the SFC - Grafcet and controller to emulate any mechanism.

1.26 Photos / Images
Photos or images of components are built-in and shall be supplied with the software. The user has the option of adding other pictures or documents to each component in order to enrich the schematic description or convey any pertinent information.

1.27 Bill of Material and References
It shall be possible to reference each component on the schematic and to recall on a table the list of components based on those references. Thus, it shall be possible to navigate between the BOM and the schematics using hyperlinks.

1.28 Cross-Section Animation
The cross-section animation shows the internal behavior of certain components synchronized with circuit simulation.

1.29 Component Modeling
Component Modeling is more visual and tends to be as close as possible to manufacturer specifications. The dynamic part of most of the components is considered mathematically as smooth and can be represented by differential equations. Component performance and efficiency can be represented as parameterized curves or table that represent the global input-output maps.

1.3 Fluid modeling

Fluid modeling can also be based on a data mapping which explains viscosity, density and Bulk modulus as a function of temperature and pressure. Fluids can be mixed by using the multi-circuits capability. The characteristics of mixed fluids must be known by the user and are not computerized automatically.

Variable Management

Variable Types

The variable types shall be compliant to the IEC 61131-3 international standard. All data types shall be supported.
Structure of variables (global, internal, components, emitters, receivers)
The communication between the various technologies shall be achieved by variable assignments.

Variable Manager (creation, modification, filter, etc.)
This module offers a non-modal window that makes it possible to monitor all the variables used by the simulator. The use of filters allows targeting specific variables. Interfaces between the Software and other equipment.

Virtual Machine
The software can act as a virtual machine and communicate with other equipment either through OPC client or an I/O interface card.

OPC- Client/Server Module
The software shall allow communicating between any peripheral devices for which an OPC server or client is available.

Simulation

General Simulation
When a project is simulated, all symbols in the system shall become animated or colored.
The animations shall be synchronized and the SFC – Grafcet/Ladder shall be activated. Plotters and dynamic measuring instruments are refreshed. Simultaneously, the user can mouse click on the controllable elements. The results of the multi-technology simulation shall be shown through the animated schematics. The user can plot, register, and analyze data calculated by the simulator. All interactions are available during simulation, such as fixing parameters of components using the mouse: circuit controls, external peripheral controls (joystick, wheel, pedal, PLC, etc. Dynamic measuring instruments can be used in order to measure and display data.

Modes
System simulation can be launched in normal speed simulation mode; this means using the full calculating capacity of the computer without surpassing the real time. The simulation can be switched to the step-by-step (so that screenshots may be taken) or slow motion mode.

Simulation Pace Time
The user can now select the simulation time step from 10 milliseconds to 0.1 milliseconds allowing for customizable simulation ranging from a complete system simulation to a very precise component-level analysis.

Diagnostics
It is possible to declare maximum values for each component and values not to exceed (example: pressures, temperatures, loads). In case of breach, each faulty component will be visually and dynamically indicated on the schematic or eventually failures on component can be triggered.

Message Window
The window keeps the user informed of any problems or errors encountered by the editor or simulator. Hyperlinks direct the end user towards the faulty component onto the diagram.

Visual Indicators: Data Display (Dynamic Measuring Instruments and Plotter)
The output values calculated by the simulator can be viewed via dynamic measuring instruments, which can easily be inserted in the circuit without modifying its conception, or via a plotter dedicated to fluid or electrotechnical data. These shall allow the tracing of any variables at the component level, such as pressures, flows, temperatures, loads, intensities, power, etc. It shall be possible to view the direction of the flow with arrows and/or animation. The gravity field can be modified.

Hydraulic and Pneumatic Simulation
Temperature, flow, and pressure values can be calculated during simulation. For oil, the evolution of viscosity and density is calculated as a function of temperature. The pressure losses are calculated in the lines as a function of the fluid type and material. Gravity can also be considered. Rigid or flexible lines can also be modeled.

Visualization of Pressures and Flows
Configuration of colors exists by default and can be configured. For training purpose, it can be configured to not show any color in order to hide visual information to the trainees.

Animated Lines and Detection of Open Paths
The software shall offer an animated view of line flow, as well as a diagnostic of open paths or connections during simulation. This allows the user to click on a line and, from this selection, be able to view all lines that are linked via components open to the initial line. The selection then becomes underlined, including the initial line, while the other lines become dark grey. In simulation mode, a new button can be added to the simulation toolbar.

Electrotechnical Simulation
The voltage and current values are calculated by the simulator. Voltage losses can be calculated in electric wires as a function of the type of material used. It is also possible to measure phase displacements.

One-Line Diagram Simulation
Three-phase one-line components have such behaviour during the simulation that allows users to view the global functioning of an electric circuit. Load monitoring functions on disconnections and circuit breakers shall allow to view the functioning state of the circuit.

Troubleshooting
The modelling of each hydraulic, pneumatic, and electrotechnical components integrates faults that can be triggered during the system simulation. A set of troubleshooting tools (multi-meter, hydraulic tester, pressure gages, and thermometer) shall be used to diagnose and repair the problems. Users can quickly and easily perform "What-if" scenarios to resolve potential problems. It is possible to disconnect wires or lines to isolate parts of a circuit, perform measurements, and repair or replace components to solve suspected failures. The set of realistic measuring tools shall include the Multimeter clamp, Oscilloscope, Hydraulic Tester, Multimeter, Thermometer and Manometer to allow circuit measurement of the electric current without having to disconnect wires.

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

Other Tools

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

Video Recorder
It shall be possible to record and create AVI files with voice that register what the screen is showing. There is also an option to synchronize the recording with the simulation.

	Sound The use of sound effects and spoken text is possible during simulation. This allows the creation of fully documented didactic files including sound and animation. **Black Box and Function Box** These components shall allow the creation of controllers with visual animation. **Hyperlinked Documents** The software shall allow the conception of structured courses in a vertical or transverse way. It is possible to navigate between projects, like on an Internet browser. The projects can be hyperlinked with each other. **Demonstration Files** Several demonstration circuits shall be made available for each technology and can be modified by the user. The following functions shall be available also to ensure greater user flexibility: • Translation Manager: Display content visible on schematics or tooltips in the chosen language • Display functions: references, satellites, highlight links, etc. • Navigation by links created between components and documents • Layer selection and display Printing project documentation		
2.	**Intelligent Building Engineering Technology Training Equipment** (Network Communication System, Comprehensive Cabling System) The Equipment must be Compliant to WorldSkills ASEAN Skills Standard **TECHNICAL DESCRIPTION:** • The trainer is a Hybrid Network Communication and Comprehensive Cabling System has can perform network and cabling, LAN, WAN up to Fiber Optic Experiments. • The equipment is composed of building model platform, system device, auxiliary material and tools. • The building model platform mainly includes platform frame, mesh mounting plate, power input protection and alarm unit, standard 19-inch open rack and chassis. • System devices includes power, network, monitoring, display, input and output devices etc.; auxiliary material includes wire, fasteners. • Tools includes ladder, common used and special tools. • The software is composed of special system software and general monitoring software. • The students can do operation of "network communication system" and "comprehensive cabling system" such as installation, cabling, wiring, configuration, measurement, analysis, debugging, maintenance and etc., to understand each system (buildings, equipment, management, vertical and horizontal lines, workspace) in the actual application and master basic technical points. • The capabilities of students' teamwork, communication, planning organization, project implementation will be tested and improve comprehensive vocational skills. **THE EQUIPMENT SHALL HAVE TECHNICAL PARAMETERS:** • Power input: single-phase three-wire, AC220V + / - 10%, 60hz; • Safety protection: grounding, leakage (action current ≤ 30mA), overvoltage, overload, short circuit, and over-step trip; • Power consumption: ≤ 400W; • Machine weight: ≤ 200KG; • External dimension (width x depth x height) : 2006 mm (single room) x 1003 mm x 2410 mm.		

THE EQUIPMENT SHALL HAVE TECHNICAL CONFIGURATION:		
1. Bench Frame	1	set
2. Mesh Installation Plate	1	batch
3. Simulated Beam-Column	2	pc
4. Power Input protection and alarm unit (Current limiting component, leakage protection module and alarm auxiliary contact head)	1	set
5. 19 inch open type rack	1	set
6. 19 inch open type chassis (4U, wall-mounted type)	1	set
7. End-user information box	1	set

	8. Data/ voice module	1	pc
	9. Cable TV signal module	1	pc
	10. Weak current monitoring/ security module	1	pc
	11. PDU power strip plate	1	pc
	12. Non-shielded RJ45 socket module	12	pc
	13. 24 bit RJ45 Socket	2	pc
	14. Coils	8	pc
	15. Optical Fiber Module	2	pc
	16. Fiber Optical Transceiver	2	pc
	17. 24 port Ethernet exchange	1	set
	18. SPC exchange	1	set
	19. Telephone	2	pc
	20. LCD TV	1	set
	21. Network infrared camera	1	set
	22. AV RF Cable	50	meter
	23. Multimode optical cable (12 core)	50	meter
	24. Optical fiber pigtail	24	pc
	25. RJ45 Network Jump cable UTP (2m)	24	pc
	26. Voice jump cable UTP (2m)	12	pc
	27. SC optical fiber jump cable (3m)	8	pc
	28. IDC voice module (4 pair)	40	pc
	29. IDC voice module (5 pair)	10	pc
	30. Non-shield RJ11 socket	100	pc
	31. Non-shield RJ45 socket	100	pc
	32. 110 jumper clamp and testing experiment modu	1	set
	33. RJ45 Network cable making and testing experi	1	set
	34. Bridge and related accessories	1	batch
	35. PVC trunking and related accessories	1	batch
	36. Bellow and related accessories	1	batch
	37. Fixed part	100	pc
	38. Self-tapping screw	1	batch
	39. Flexible cord 0.3mm2 (yellow, green, red, blue, black)	1	batch
	40. Flexible cord 1.0mm2 (red, black, yellow, green)	1	batch
	41. Video cable SYV75-3	1	batch
	42. BNC Video source JS-3 (metric)	1	batch
	43. Cable TV F source	1	batch
	44. DC power source	1	batch
	45. Solder wire	1	roll
	46. Rubber tape	2	roll
	47. Marking tube	1	roll
	48. Ribbon	4	pack
	49. Trestle ladder	1	pc
	50. Working bench	1	set
	51. Vice	1	pc
	52. Tool box	1	pc
	53. Transparent component box	1	pc
	54. Digital Multimeter (9v battery)	1	pc
	55. PN-S (9v battery)	1	pc
	56. Optical power meter (9v battery)	1	pc

THE EQUIPMENT SHALL HAVE THE FOLLOWING TRAINING CONTENTS:

- System installation, cabling, wiring, programming, commissioning, operation, maintenance, and repair

- Installation of open type rack, chassis, distribution rack and other infrastructure

- Installation and cabling of the bridge and related accessories

- Installation and cabling of trunking and related accessories

- Installation and cabling of bellow and related accessories

	- Installation of various integrated cabling device and module - Connector pressing, jumper and various bus making and testing - Installation of Information module - Terminal connection and testing of distribution rack - Installation and testing of copper cable management system - Installation and testing of optical cable management system - Quick cold pressing terminal connection and testing of cable and terminator - Fiber-optic transceiver connection and signal conversion - Installation and testing of network communication management system - Ethernet switch LAN connection and distribution - Connection and debugging training of telephone program-controlled switch and telephone - Installation and testing of network camera, televisions, telephones, and other residential terminal equipment - Residential intelligent monitoring and management - Cable link speed and quality testing - Copper cable, fiber optic cable fault troubleshooting
3.	**Intelligent Building System Integration and Internet of Things Technology Training Equipment** Power input: single phrase and three wires /AC220V/60Hz Safety protection: Grounding/leakage (action current ≤30mA)/ overvoltage/overload/short circuit, scram protection Overall power consumption: ≤100W (don't contain computer, computer≤300W） AC power output: two route isolation DC power output: DC5V/2.5A、DC12V/2A; DC24V/1.5A; Adjustable DC power output: DC0-30V/2A ； Total weight: 200 kg Dimension (length * width* height): a) 1580mm×720mm×1760mm （Frame part） b) 2040mm×720mm×1760mm （fixed with both sides Spherical camera and warning lights) The equipment shall have the following training contents : 1. System wiring plugging, programming, commissioning, operation, maintenance and repair 2. High-definition coaxial video signal and hard disk recorder connection 3. High-speed dome camera, infrared gun-type camera and monitor and hard disk recorder connection and monitoring 4. Through hard disk recorder control high-speed dome camera PTZ movement and lens action 5. Through hard disk recorder set and adjust the high-speed dome camera PTZ presetting and cruise 6. Dynamic monitoring screen changes and automatic recording of peripheral alarm 7. Passive infrared intrusion detector, active infrared detectors , sound and light alarm and hard disk recorder connection and setting 8. Video monitoring system and the surrounding security system linkage 9. LAN monitoring of network video surveillance management software 10. LonMaker software installation and Plug-in registration 11. Connection of light illumination switch, halogen lamp and the DDC control module and Event Scheduler function module schedule programming 12. Connection of light sensor, LED light, and DDC control module and analog input and output programming of Universal_Input function module 13. Connection of passive infrared detectors, fluorescent lamp and DDC control module and delay programming of Universal_Input function module 14. Connection of triple scene button, fluorescent tube and DDC control module and digital logic programming of State_Machine function module 15. Connection of emergency switch and DDC control module and analog logic programming of Analog_Function function module 16. Light intensity sensor detection training based on CAN bus and GSM communication 17. Air quality sensor detection training based on CAN bus and GSM communication 18.Air temperature and humidity sensor testing and training based on CAN bus and GSM communication

19. Soil temperature and humidity sensor testing, and training based on CAN bus and GSM communication

20. Carbon dioxide sensor testing, and training based on CAN bus and GSM communication

21. PM2.5 detection training based on CAN bus and GSM communication

22. Weight sensor detection training based on CAN bus and GSM communication

23. Flame sensor detection training based on CAN bus and GSM communication

24. Human pyroelectric sensor detection training based on CAN bus and GSM communication

25. Security detection training based on CAN bus and GSM communication

26. Electric curtain control training based on CAN bus and GSM communication

27. Lighting control training based on CAN bus and GSM communication

28. Air valve control training based on CAN bus and GSM communication

29. Water valve control training based on CAN bus and GSM communication

30. Plant watering control training based on CAN bus and GSM communication

31. Fish feeding control training based on CAN bus and GSM communication

32. Air purifier control training based on CAN bus and GSM communication

33. Cold and warm fan control training based on CAN bus and GSM communication

34. LCD monitor control training based on CAN bus and GSM communication

35. Electric lock control training based on CAN bus and GSM communication

36. Infrared learning and control training based on WIFI communication

37. PC monitoring training based on CAN bus

38. Android monitoring training based on GSM communication

39. Intelligent household monitoring training based on WiFi communication

40. Integrated monitoring software through the video interface server connect hard disk recorder and monitor screen in real-time

41. Integrated monitoring software through the DDE interface server connect DDC host module and monitor data in real-time

42. Integrated monitoring software through the Internet of Things interface server connect the CAN bus and monitor data in real-time

43. Comprehensive integrated monitoring and management training of SAS, BAS and IOT integrated system based on intelligent building integrated monitoring software.

The training equipment shall have the following configuration:		
1. Aluminum bracket with brake universal wheel , handle	1	set
2. Fireproof board	1	set
3. Electrical box	1	pc
4. Protective barrier	1	pc
5. LCD 19 inch	1	pc
6. Detection actuator Function control circuit board, inductance coil, contactor, and relay	1	pc
7. 2P air switch	3	pc
8. Leakage protection module	2	pc
9. Alarm module	1	pc
10. Self-reset button	1	pc
11. Emergency switch	1	pc
12. AC220V guide rail three-plug module	1	pc
13. AC220V guide rail two-plug module	1	pc
14. DC0-30V adjustable switch power	1	pc
15. Adjustable potentiometer	1	pc
16. DC digital voltage ammeter	1	pc
17. Four-layer alarm light	1	pc
18. 10A safety plug terminal	1	pc
19. 5A safety plug terminal	1	pc
20. hard disk recorder	1	pc
21. SATA hard disk	1	pc
22. LCD monitor	1	pc
23. High speed dome camera	1	pc
24. Infrared camera	1	pc
25. Self-lock button with DC24V green indicator light Simulate passive curtain detector and active detector	2	pc
26. Relay switching circuit board 2 pcs	1	pc
27. DC12V buzzer 1 pc	1	pc
28. Video monitoring management software 1 pc	1	pc
29. Video Monitoring Wireless client software 1 pc	1	pc
30. Host monitor module 1 pc LonWorks bus DDC	1	pc
31. LON network adapter 1 pc	1	pc

32. Self-lock button with DC24V green indicator light simulate illuminous switch ,passive infared probe and emergency switch	3	pc
33. Self-reset button with DC24V red indicator light	3	pc
34. DC24V yellow indicator light	4	pc
35. Relay switching circuit board	10	pc
36. Potentiometer simulate illuminous sensor	1	pc
37. DC voltage adjustment conversion circuit board	1	pc
38. DC voltage input transmission digital tube simulate LED light	1	pc
39. DDC program software Plug-in program LonMaker3.12	1	pc
40. Embed host board ARM	8	pc
41. AC electric, water valve and air valve module	1	pc
42. Illuminous sensor and electric curtain module	1	pc
43. PM2.5 air quality sensor module	1	pc
44. Air, earth temperature and humidity sensor and plant irrigation module	1	pc
45. Pyroelectric sensor module	1	pc
46. Pet feed and weighing module	1	pc
47. Fire and carbon dioxide sensor module	1	pc
48. Security and access control module	1	pc
49. CAN communication adapter	1	pc
50. Wi-Fi directional infrared controller	1	pc
51. Wireless router	1	pc
52. USB wireless network card	1	pc
53. GSM module	1	pc
54. WiFi touch screen terminal Android system	1	pc
55. Self-lock button with DC6.3V green indicator light simulate passive curtain probe	1	pc
56. Self-reset button with DC6.3V red indicator light	2	pc
57. DC6.3V yellow indicator light	7	pc
58. DC6.3V green indicator light	1	pc
59. DC6.3V red indicator light	1	pc
60. PM2.5 detector simulator potentiometer A/D transmit , RS232 communication protocol output	1	pc
61. Carbon dioxide sensor simulator	1	pc
62. Pressure transmit simulator	1	pc
63. Air conditioner, air purifier and TV simulator infrared remote receive	1	pc
64. infrared remoter	1	pc
65. ARM emulator	1	pc

4.	**Refrigeration and Airconditioning for Skills Competition**		
	The Equipment must be Compliant to WorldSkills ASEAN Skills Standard		
	General Description:		
	The equipment shall consist of operation bench and training bench	1	set
	The operation bench shall be equipped with various tools. The training bench shall be made of aluminum alloy training bench, control module and refrigeration system components.	1	set
	A mesh plate shall be installed on the aluminum alloy bench which shall facilitate the installation of pipelines, components and the electrical wiring.	1	pc
	The control module shall be equipped with two digital display temperature controllers to control the temperature of the two water tanks in real time.	1	pc
	The installation of two pressure gauges can intuitively see the operating condition of the equipment.	1	pc
	Through this equipment, the technology of pipeline making, equipment installation, electrical wiring, operation and debugging can be learned, which can strengthen students' understanding of the refrigeration system and contribute to the comprehensive quality cultivation.	1	pc
	Technical Parameters: 1. Input Power: 1. Input power: AC 220V 10%, 60Hz 2. Input power: 0.6 kw 3. Working Environment: Temperature: -10℃～+40℃ Relative humidity: ≤90% (+20℃) Altitude: ≤4000m Clean air, no corrosive and explosive gas, no conductive and insulating dust 4. Dimension: L*W*H =1500mm×650mm×1800mm		

5. Safety: > with grounding protection > leakage protection and its safety complies with relevant national standards > High-insulation safety sockets and high-strength safety test leads with insulating sheaths will be used.		

General Conditions:
• Suppliers must submit Letter of intent to join the bidding with product catalog of item/s being offered.
• Must attached site inspection certification issued by the end-user.
• Suppliers may offer higher specifications provided it will not affect its compatibility, functionality, purpose & its related laboratory experiments with the other specification items. Below the minimum required specifications will be ground for disqualification/blacklisting.
• All electrical wirings for the installation of the equipment as well as the LAN connections & other incidental costs needed to make the equipment functional should be shouldered by the supplier.

Other Terms and Conditions:
• Equipment must be supplied with training manuals/curriculum in English.
Note: Must attach the curriculum with objectives and skills."
• Bidder must submit brochure/catalogue indicating the brand name & model of bid item/s as additional technical requirements, failure to submit will be grounds for disqualification.
• Bidder must have a letter of exclusivity from the manufacturer for the purposes of after-sales training, warranty and preventive maintenance of the equipment.
• Bidder must have a training center with in-house Trainor Certified by the manufacturer for the pre- training to be conducted @ the bidder's training center also for equipment testing & checking by the end – user prior to delivery at Tarlac State University.
• Bidder must conduct aftersales training at Tarlac State University after completion of delivery and installation.
• Bidder must attached pictures of their training center and pictures of aftersales training of faculty conducted at their training center as additional technical document requirements.
• Bidder must have at least 1 set demo unit of the item/s offered presented during bid opening or post qualification.
• Bidder must be an Authorized Distributor/ Reseller of the bid item/s & authorize to provide technical support & must attach documents to support such claim.
• Supplier shall provide technical personnel - Registered Engineers/Technician or equivalent to perform maintenance check of the equipment if needed. Supplier confirms the availability of manpower to perform such functions.
• Supplier should attach the list of manpower requirements.

AFTER SALES SERVICE:
1) Free trainers' training at supplier's training center before the delivery of the equipment or at Tarlac State University upon delivery and installation
2) Free semi annual training with certification, on request
3) Free product inspection, on request
4) Free consultation / seminar, on request
5) Free product demonstration on selected item, on request

Note: Bidders must state in the Statement of Compliance either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidders statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the provision of **ITB** Clause 4.

Section VIII. Bid Documents Checklist

This Bid Documents Checklist is provided to guide the Bidder in preparing his/her bid. The checklist may be used by the Bidder to verify if the Bid includes all the prescribed documents.

The Bidder, in submitting the required documents, must use the prescribed forms found in Section X. Bidding Forms. However, should a bidder choose to use a different formatting style for a required document, the bidder must ensure that the substance in the form given in Section X for that particular document is substantially captured in the equivalent document.

A. Eligibility and Technical Documents (*Contents of Envelope 1*)	
☐	1. Photocopy of valid PhilGEPS Certificate of Registration
☐	2. Photocopy of valid Certificate of Registration from SEC, DTI, or CDA, whichever is applicable
☐	3. Photocopy of valid Mayor's/Business Permit
☐	4. Photocopy of valid Tax Clearance
☐	5. Statement of all on-going government and private contracts, including contracts awarded but not yet started, if any
☐	6. Statement of Single Largest Completed Contract (SLCC), similar to the contract to be bid, in accordance with ITB Clause 5.3
☐	7. Audited Financial Statements stamped "received" by the BIR or its duly accredited and authorized institutions
☐	8. NFCC computation
☐	9. *If applicable,* a valid Joint Venture Agreement (JVA), in case the joint venture is already in existence, or duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful
☐	10. Bid Securing Declaration or Bid Security, in the form, amount and validity period, as prescribed in ITB Clause 14.1
☐	11. Bidder's Compliance to the Technical Specifications
☐	12. Omnibus Sworn Statement, which shall be duly notarized
A. Financial Documents (*Contents of Envelope 2*)	
☐	1. Financial Bid Form in the prescribed form
☐	2. Schedule of Prices

Section IX. Bidding Forms

TABLE OF CONTENTS

[*Bidder's Letterhead*]

[*Date*]

To: Tarlac State University
Re: Invitation to Bid No.

List of All Ongoing Government and Private Contracts, Including Contracts Awarded But Not Yet Started

Row 1: Name of Contract Row 2: Location of Project Row 3: Contract Price	Row 1: Procuring Entity Row 2: Contact Person/Address Row 3: Telephone No.	Description of Goods	Row 1: Date of Award Row 2: Date Started Row 3: Contract Duration	Value of Outstanding Goods

Attached herewith are the following documents: Notice of Award, Notice to Proceed, and Official Receipts/Invoices, as evidences in support of the foregoing information.

I/We certify that the foregoing information and all of the supporting documents are true and correct.

[*Signature*]
[*Name of Bidder or Authorized Representative*]
[*Position or Title*]

[*Bidder's Letterhead*]

[*Date*]

To: Tarlac State University
Re: Invitation to Bid No.

Statement of Single Largest Completed Contract Similar to the Contract to be Bid

Row 1: Name of Contract Row 2: Location	Contract Price	Row 1: Procuring Entity Row 2: Address Row 3: Contact Person/Tel. No.	Description of Goods	Date of Award	Date Completed

Attached herewith are the following documents: Contract Agreement, Notice of Award, Notice to Proceed, Official Receipt/Invoice, Certificate of Final Inspection, and Certificate of Acceptance, as evidences in support of the foregoing information.

I/We certify that the foregoing information and all of the supporting documents are true and correct.

[*Signature*]
[*Name of Bidder or Authorized Representative*]
[*Position or Title*]

[*Bidder's Letterhead*]

<div align="right">[*Date*]</div>

To: Tarlac State University
Re: Invitation to Bid No.

NET FINANCIAL CONTRACTING CAPACITY

Based on our Income Tax Return and Audited Financial Statement for the Fiscal Year [*YEAR*], duly submitted to the Bureau of Internal Revenue, and which form part of our Bid, the summary of our firm's financial condition is as given below:

		Year [*YEAR*]
1.	Total Assets	
2.	Current Assets	
3.	Total Liabilities	
4.	Current Liabilities	
5.	Net Worth (1-3)	
6.	Net Working Capital (2-4)	

Based on the aforementioned data and the Value of Outstanding Works from the Statement of All Ongoing Government and Private Contracts, which also form part of our Bid, our Net Financial Contracting Capacity (NFCC) is:

NFCC = [*(current asset minus current liabilities*) (**15**)] minus [*value of all outstanding or uncompleted portions of the projects under ongoing contracts including awarded contracts yet to be started coinciding with the contract to be bid*].

NFCC =

I/We certify that the foregoing information and all of the supporting documents are true and correct.

<div align="center">

[*Signature*]
[*Name of Bidder or Authorized Representative*]
[*Position or Title*]

</div>

<div align="center">**Bid-Securing Declaration**</div>

Republic of the Philippines
City/Municipality Of _____) **S.S.**

x--x

Invitation to Bid *[Insert reference number]*

To: **Tarlac State University**

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid-Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1 (f), of the IRR of RA 9184; without prejudice to other legal action the government may undertake.

3. I/We understand that this Bid-Securing Declaration shall cease to be valid on the following circumstances:

   a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;

   b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and

      i)   I/we failed to timely file a request for reconsideration or

      ii) I/we filed a waiver to avail of said right;

   c. I am/we are declared as the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this _____ day of *[month] [year]* at *[place of execution].*

<div align="center">
[*Signature*]
[*Name of Bidder's Authorized Representative*
[*Signatory's legal capacity*]
Affiant
</div>

SUBSCRIBED AND SWORN to before me this __ day of *[month] [year]* at *[place of execution]*, Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her *[insert type of government identification card used]*, with his/her photograph and signature appearing thereon, with no. _____.

Witness my hand and seal this ___ day of *[month] [year]*.

[*Name and Signature of Notary Public*]

Serial No. of Commission _____

Notary Public for _____ until _____

Roll of Attorneys No. _____

PTR No. __, *[date issued], [place issued]*

IBP No. __, *[date issued], [place issued]*

Doc. No. ___

Page No. ___

Book No. ___

Series of ____.

To: Tarlac State University
Re: Invitation to Bid No.

Compliance to the Technical Specifications

Item No.	Description			Bidder's Compliance State "Comply" below *if your offer is complying with the specifications, otherwise state* "We are offering the same goods with the following specifications [*State the complete specifications of the alternative offer*]
1.	**Automatic Production Line Training Equipment** includes:			
	Training bench	1	set	
	Feeding unit (vertical feed tube, topping cylinder, pusher cylinder, material detection sensor parts, installation rack, material detection device part, wiring terminal unit, etc.)	1	set	
	Transmission unit (four freedom manipulator, linear transmission unit, proportional transmission mechanism, multi-function installation rack, synchronizing wheel, synchronizing belt, wiring terminal unit, etc.)	1	set	
	Processing unit (sliding material platform, simulated punch, wiring terminal unit, etc.)	1	set	
	Assembly unit (feeding mechanism, rotary feeding unit, manipulator assembly unit, wiring terminal unit)	1	set	
	Sorting unit (conveyor mechanism, three phase motor power unit, sorting pneumatic components, sensor detection unit, precision feedback and positionzer mechanism, wiring terminal unit, etc.)	1	set	
	Distribution box	1	set	
	Servo (Panasonic permanent magnet synchronous AC servo motor, AC permanent magnet synchronous servo drive device as the movement control device of the manipulator)	1	set	
	Three phase motor (mainly of motor and reduction gearbox, the gear ratio is 1:10)	1	set	
	photoelectric sensor	7	pc	
	photoelectric sensor	2	pc	
	proximity sensor	1	pc	
	Metal sensor	2	pc	
	Fiber optic sensor	3	pc	
	warming light	1	pc	
	Manifold board	5	pc	
	Double way electronic controlled valve with light	2	pc	
	Single way electronic controlled valve with light	16	pc	
	cylinder (Equipped with magnetic switch, installation rack)	18	pc	
	Communication device	1	set	
	Filter pressure relief Valve	1	set	
	Solenoid valve components	5	set	
	Power distribution system	1	set	
	Air pump	1	set	
	Wiring terminal block	5	set	
	Control unit (consists of 3pcs indicator ,2pcs jog button, 1pc switch, 1pc emergency stop button)	5	pc	
	PLC controller (PLC brand selectable)	1	set	
	Workpiece (6 kinds, each in 5 pcs)	1	set	
	Touch screen	1	set	
	The Equipment must be Compliant to WorldSkills ASEAN Skills Standard			

Equipment overview: The equipment is composed of feeding unit, processing unit, assembly unit, transmission unit and sorting unit. The electrical layout is in double-drawer; all electrical controllers are installed on the drawers, in accordance with the real industrial patterns. Each unit is an independent system, as well as an electromechanical system. The executive mechanism of each unit is mainly based on pneumatic execution, but the mechanical arm movement of transmission unit adopts servo motor driving and precise position control, the drive system has the features of long travel and multi positioning points. The conveyor belt drive of sorting unit adopts general frequency converter drive 3-phase asynchronous motor. The position control and frequency converter technology is the most widely used electrical control technology in modern industry.			
Training contents:

1. It combines mechanical technology, sensor technology, AC motor variable frequency speed regulation and stepper motor drive control, touch screen technology, PLC control and communication network technology. Feeding unit installation and debugging; Processing unit installation and debugging; Assembly unit installation and debugging; Sorting unit installation and debugging; Transmission unit installation and debugging; Automatic production line control installation and debugging.
2. The whole structure is open, modules are replaced easily, the required modules can be selected conveniently for teaching and competition: Replace and expand working unit; Electrician is updated to field bus; Position module to control servo motor.
3. Used for teaching, complete the following tasks:
   1) Pneumatic system installation and debugging: Pneumatic direction control circuit installation; Pneumatic speed control circuit installation; Swing control circuit installation; Pneumatic sequence control circuit installation; Pneumatic mechanical arm installation; Pneumatic system installation and debugging; Pneumatic system design and installation.
   2) Electrical control circuit installation and PLC programming: 3-phase motor positive and reverse rotation control circuit connection and control programming; 3-phase motor control circuit connection and control programming; Motor speed control circuit connection and control programming; Frequency converter analogy control connection and control programming; Servo motor control circuit connection and parameter setting; PLC control network control technology; Pneumatic direction control programming; Pneumatic sequence control programming; Pneumatic mechanical arm control programming; Belt conveyor control programming; Electromechanical equipment control programming; Automatic production line control programming.
   3) PLC communication network installation, programming and debugging: PLC control technology---485 communication technology programming and debugging.
   4) Electromechanical equipment installation and debugging Transmission co-axiality adjustment; Feeding unit mechanical installation and adjustment; Processing unit mechanical installation and adjustment; Assembly unit mechanical installation and adjustment; Sorting unit mechanical installation and adjustment; Transmission unit mechanical installation and debugging; Automatic production line installation and debugging.
4. The equipment is used in assessment and competition: Mechanical parts assembly and adjustment capability; Electromechanical equipment installation and debugging capability; Circuit installation capability; Pneumatic system installation and debugging capability; Frequency converter automatic production line operating capability; Servo motor automatic production line operating capability; PLC analogy control in automatic production line operating capability; Electromechanical equipment control programming capability; Automatic control system installation and debugging capability. PLC network installation, programming and debugging capability; Human-machine interface, configuration technology programming and debugging capability. | | | |
| **Multi-Technology Design and Simulation Software, Single user license dongle**

This software contains libraries and modules for: Hydraulics, Pneumatics, components sizing-energy, bill of material and report, catalogue manager, Manufacturers' catalogues, Control panels and | 2 | pc | |

	2D-3D HMI, Teach ware-workflow, Didactic support SFC Compliers, Sequential function chart, Digital electronics, APISs/, Script language, PLC ladder logic, CAN bus, Block diagram-Math, Electrical Controls, Electro technical One-line, Electro technical, Mechanical			

Capabilities:
- Interactive lab exercise

  These exercises include simple schematic that can be simulated and animated in order to be analyzed. Teachers can also modify these exercises and create ones.

- Online remote Access Licensing

  You can prepare and simulate your courses and homework from home, school or workplace.
- Teach ware

  This software offers guides, lectures, animations and lab notes for all levels of discipline.
- Workflow

  Allows teachers to create and sequence content in order to evaluate student's knowledge retention.
- Configuration tools

  Allows you to create and configure valves, cylinders, motors etc. to obtain components which are graphically compliant with your requirements and respectful of real technical performance
- Create and customize your own symbols, libraries and templates

- Component sizing

  Provides calculation worksheets specific to each category of pneumatic, hydraulic and electrical components which include calculation tool necessary for component sizing.
- Adjustable component simulation parameters

  This includes parameters such as applied loads, dimensions angles, internal leakages, force, torque, etc.
- Dynamic, Realistic and Visual Simulation

  Accurately reproduce the system's behavior in a dynamic and visual way. During simulation, components are animated and lines and wires are color-coded according to their state
- Virtual System

  Using the electrical, PLC libraries and SFC/GRAFCET module, the student simply links sensors, switches, lights, conveyors, etc., in order to make the virtual systems operate according to teacher's instructions.
- 3D Editing and Animations

  Includes a 3D editor for creating and importing 3D parts in STEP, STL and IGES. It is possible to visualize, simulate, and animate them simultaneously with the technologies that drive the system
- Mechanical Links

  Mechanical bodies can be linked to fluid power actuators to simulate and animate their effects.
- Cross-section Animation
  Users can build cross-section animated views and link them to the simulation results in order to produce synchronized animations.
- System behavior analysis
  You can monitor and visualize simulation variables during simulation.

- Troubleshooting Modules

- Circuit Modification during Simulation Provides tools for disconnecting wires and pipes during simulation to isolate parts of a circuits, perform measurements and repair or replace components to fix suspected failures. - Diagnostic Tools Provides extensive diagnostic tools allowing to detect inconsistencies or errors such as non-compliance with ISO standards, free connectors, redundant or overlapping lines, etc. - Interfaces to programmable logic controllers and equipment - Manufacturers' Catalogues Offering teachers and students an extensive library with thousands of preconfigured components that reproduce real world functions. - CAN Bus Links to Operate Virtual Machines - PLC Export - Block Diagram It is possible to create a graphical environment for component and system modeling using predefined function blocks. It can also be used to create and test complete control loops. - Sequential function charts - HMI and Control Panels User can easily create animated shapes that reproduce the behavior of the equipment they represent. - Electrical Controls Interacts with all components from other libraries so as to create electrically controlled systems. - Electro technical Offers wide array of components to create AC and DC electrical circuits, from basic to advanced uses. It supports IEC and NEMA standards. Motor soft starters and VFD's are available. - Electro technical One-line Enables the design of diagrams for all voltage levels in a typical one-line representation of networks for power generation, transmission and distribution. - Digital Electronics Includes standard devices such as inverters, logic gates, flip-flop, counters, shift registers, comparators, switches, LEDs, 7-bar display, decoders, multiplexers, etc. - Programmable logic controller Offers PLC logic libraries for different brands of PLC - Pneumatics Includes all the symbols necessary to create pneumatic, electro pneumatic and logic systems. - Hydraulics Offers all component symbols required to create mobile and industrial hydraulic systems and functions. **Educational Edition** This Edition contains all the workshops and tools for the making of a project, including simulation and documentation of the entire system. **File Security** When a project is created in (extension PRX) a backup (extension BACKUP) shall be created. The current file is also automatically saved during regular intervals (extension AUTOSAVE). **Unit Systems** The software shall support both metric and imperial unit systems. At any time, during a session, the user can modify the unit type; the numeric value will be converted automatically.			

Context Help and Help Guides
The following guides are included in the application: Installation and Administration, Basic User's Guide, Fluid Power, Electrotechnical, SFC-Grafcet, HMI, One-Line Diagram, Catalogue Manager, 3D Editor, OPC Module, API & Scripting Language and Workflow Manager. The User guides shall be available on the installation CD/DVD in PDF format.

General Interface
The software interface complies with Windows Ribbon standards and is consistent no matter what file/schematic is edited.

Workshops
Every workshop available shall allow the user to draw circuits using symbols from the library or products from Manufacturer Catalogues and to realistically simulate the corresponding technology with measurable values. Multi-technology simulation shall be available and transparent to the user.

Power Workshops
1.1. Hydraulics and Proportional Hydraulics
In conformity with the ISO 1219-1 and 1219-2 standards, the Hydraulic and Proportional Hydraulic libraries shall offer all the symbols necessary for designing a hydraulic or electro hydraulic system. The libraries shall offer hundreds of symbols (components) including valves, variable displacement pumps and motors, which allow the creation of simple or advanced systems, such as open or closed loops. To avoid overloading the library, smart builder shall be available for Directional Valves, Cylinders, Reservoirs, Spool Position The symbols shall be pre-configured by default but can easily be sized to reproduce a specific behavior, taking into consideration pressures, flows, pressure losses, etc. Among the simulation parameters that can be configured, the user can apply loads, modify thermal behaviors, fluid viscosity and flow characteristics. To go along with the various component configurations, there are over 200 analog behaviors and over 1000 symbols. Mechanical transmission components such as motors, clutches, and gear boxes are also available in these workshops.

1.2 Pneumatics and Proportional Pneumatics
Includes all the symbols (components) needed to create Pneumatic, electro-pneumatic and pneumatic logic systems. Sequencer Builders are available. Like the Hydraulic workshop, the parameters of the pneumatic components can be configured to reproduce a realistic behaviour. To go along with the various component configurations, there are over 200 analog behaviours and over 1000 symbols. Mechanical transmission components, such as motors, clutches, and gear boxes are also available in this workshop.

1.3 Mechanism Manager
Mechanical bodies can be linked to Fluid Power actuators to simulate power transmission and dynamics and animate the kinematic diagram.

1.4 Electrotechnical (IEC and NEMA)
The software shall offer an extensive range of components allowing for the design of simple to complex Electrotechnical AC/DC circuits. Components' simulation parameters are also configurable. They include values of resistance, inductance, frequency, mutual inductance of a motor's rotor/stator, inertial constant, etc. To illustrate more complex concepts, the user can post various behaviors including speed, coupling, and mechanical

power. The simulation and parameter settings of components and applied constraints to the system allow for the analysis and a better understanding of a behavior. There are more than 100 analog behaviors and over 500 symbols compliant the IEC and NEMA standards and functionalities. This allows the user to design schematics containing Electrotechnical controls, power components, terminal strips, cables, boxes, and panels.

1.5 One-Line Diagram (IEC and NEMA)

Allows creating, viewing, editing, and simulating single schematics of medium and high voltage systems in applications such as power generation, power transmission, and power distribution. All necessary components (generators, bars, transformers, network equipment, protection, loads, measuring instruments, etc.) are available. Assemblies allow the definition of cells. Each component includes properties and symbols that comply with the IEC and NEMA standards. Various diagnostic tools shall be available to verify component naming, equipotential uniformity, component connections, etc.

1.6 3D Editor

Allows creating and importing 3D parts in STEP, STL and IGES and linking them mechanically to create 3D systems. It is possible to visualize, simulate and animate them simultaneously with the technologies that drive the system.

1.7 API & Scripting

Allows implementing user's own functionality in order to automate different tasks routinely applied by overwriting or creating new functionalities, hence changing the way the software normally functions, to support expanding needs to interface with other systems such as ERP, 3D CAD, PDM, and LMS...

1.8 Workflow Manager

Allows the user to automate its procedural activities, to create workflows without having any background in computer programming. This module is used to create didactic activities (exercise, Lab, evaluation,) on existing circuits.

Control Workshops and Modules

1.9 Electrical Controls (IEC and JIC)

This workshop interacts with components from other libraries for the creation of electrically controlled systems.
Includes switches, relays, solenoids, counters, push-buttons, and more.

1.10 Ladder Logic (PLC)

The software shall implement three Ladder Logic Libraries (or PLC – Programmable Logic Controller). These libraries contain instructions for Ladder Logic, such as contacts, input-output cards, timers, counters, math functions, etc. It shall be simple to conceive and simulate the control elements of an automated system. Combined with other workshops, the Ladder Logic Libraries allow the user to create a complete virtual factory.

1.11 SFC - GRAFCET

Allows the user to implement control structures following the IEC-61131 standard with a specialized editor. This language can be used in combination with any other library. The SFC (Sequential Function Chart) – Grafcet allows a more effective approach to control systems. It also provides excellent support for project documentation relating to control systems, pneumatics, hydraulics, or electric as recommended by the ISO and IEC standards.

1.12 Digital Electronics

Offers the standard elements necessary for teaching basic logic, such as inverted circuits, logic gates (European and North American Symbols), timers, counters, shift registers, comparators, interrupters, 7-segment decoders, multiplexers etc.).

HMI and Control Panels
Allows the easy creation of animated shapes (HMI – Human Machine Interface) and control panels. It reproduces full visual representation of a machine in 2D (synchronized animations with simulation). The movements and animation of all kinds are produced thank to simulator results and variable assignments. This module offers components such as switches, push buttons, potentiometers, measuring instruments, etc.).

Reports and Bill of Material
Specialized reports or Bills of Material in documents can be independently or directly inserted in the schematic. They allow the creation of BOM of all types, based on technical data, commercial information, or even personalized content.

Projects

1.13 Unit Systems
The software supports both metric and imperial units' system as well as conversion mechanisms between them.

1.14 Project Content
A project can include all documents and reports generated in by the software itself. Its structure includes sub-directories (multi-level). External documents can be attached to a project by hyperlinks.

1.15 Project Management and Project Explorer
A screen presents open projects in a Microsoft Windows like hierarchy, presentation, and navigation. From this window, it is possible to open, close, print documents, etc.

1.16 Trade Oriented Editors
Every workshop editor respects the Standards which apply to its technology. The Fluid power editor is regulated by ISO Standards but is not limited to it. The Electrical editors are regulated by IEC or NEMA (user choice). The SFC - Grafcet editor is regulated by IEC 1131 Standard.

1.17 Project History
The user can manage project's history and keep track of the revisions made.

1.18 Properties of Projects and Documents
Project and document properties can be managed using a dedicated tool in order to configure available parameters.

1.19 Project Templates
Templates of projects, schematics, and reports can be personalized by adding default attributes such as: Title Block, Bill of Material, Layers, Editing Options, and Personalized Information.

1.20 Standard Management
Standards can be defined at different hierarchical levels including: School, Class, Teachers, Students, projects, and documents. They can cover every aspect of a project for both technologies and documentation including: fluid, material, hoses, lines, wires, cables, connectors, font, colors, page layout, naming rules, components, title block, component

representation during editing and simulation, etc. Standards can be centralized in a common database shared by all users.

1.21 Multilingual Projects

A project integrated translation database shall manage all information required to switch the project from one language to another including texts, pictures, hyperlinks, audios and videos. The user simply chooses the active language and the software shalll automatically replace all corresponding information in the project with the equivalent ones found in the translation database. This new feature facilitates the transfer of the projects to foreign trainees or to colleagues or partners abroad.

1.22 SCORM Compliance

Shall allow the user to integrate into an existing Learning Management System (LMS) for interactive simulation.

Schematic Editor

1.23 User friendliness

All editors offer the same common functionalities without having to re-learn a new convention. For each editor, a fixed grid for symbols can be configured. The copy/paste or importation of images of type .JPG and .BMP is also possible.

1.24 Components insertion

The drawing of circuits is done with symbols from the libraries or products from manufacturer catalogues. Insertions and connection detections are made automatically by links already present in the schematic.

1.25 Symbol Appearance

Symbols can be mirrored, turned, rotated and enlarged. Attributes such as color and thickness can be modified according to predefined standards or forces manually.

1.26 Links

Jumping lines is done automatically and polyphase lines take shape instantly.

1.27 Diagnostic Edition Mode

Diagnostics concerning free connectors, non-assigned variables, identifier copies, direct connections, as well as detection tools for open ways, allow rapid indication of any error in the drawing or conception.

1.28 Layers

The components can be placed on different layers.

Other Requirements and Specifications:

1.1 Assembly-Grouping

Groups and assemblies of components can be created for the purpose of manipulating multiple objects on the schematic or generating a report. Editing functions (add, delete and move components, modify component properties ...) can be used within an existing Assembly or Group, without having to Ungroup or Disassemble its components.

1.2 Embedding Component

An embedding component is a quick and easy way of merging parts of a circuit in order to simplify the circuit's representation. An embedding component can be configured and manipulated like any other component and can also be saved in a user-defined catalogue.

1.3 Information on the Schematic: Displayed Information Different information linked to each component can be displayed on demand on the document or in the component's tooltip. **1.4 Formatting (text, fields, etc.)** Independent text fields can be added by the user. For all the posted texts, the format and alignment can be modified. **1.5 Drawing Tools** Coupled with the HMI workshop, these drawings allow components to be animated synchronously with the simulation. **1.6 Exportation and DXF format files opening** Documents can be exported in DXF, EMF, PDF, and TIFF formats. Files in DXF format can be opened. **1.7 SFC to Siemens Step 7 PLC Export** The SFC - Grafcet can be exported directly to Siemens TM Step 7 software. **1.8 Compatibility with Microsoft Software** User can directly copy and paste to/from Microsoft Word, Power Point, Excel, etc. Documents **1.9 Manipulation – Navigation** All classic functions, such as page layout, formatting, positioning, history of revisions, and automatic fields are available. Elements can be superimposed, ordered, aligned, distributed on a schematic and the sequence of layers can be modified by the user. **1.10 Revisions** Revision history for each document or for the entire project can be easily managed. **1.11 Title Blocks** Drawing tools and automatic fields allow the conception of title blocks to be used in model documents without having to restart from scratch. **1.12 Multi-document Circuits** If a circuit is large, it can be divided into several documents. Automatic references authorize simulation of an electric wire or line over multiple documents. **1.13 Printing Projects** Printing a project in part or in total can be done in editing mode and also in simulation mode with colors. Print preview shall be also available. **1.14 Find & Replace Text** This function allows to find text corresponding to Variables, Expressions, References and Accessories within the open project and replace it when the text content found allows the modification. **Component Libraries** **1.15 Standards** The symbols found in the libraries respect international standards, such as IEC, NEMA, JIC, ISO. Some are manufacturer's standards. **1.16 Navigation/Organization**			

It is possible, with few mouse clicks, to access over 2500 symbols available in the library. The symbols are grouped by technology and function.

1.17 Configurators

Configurators allow the user to create complex components such as valves, cylinders, sequencers, tanks, pumps, etc. This greatly increases the number of components available. Manufacturers' Catalogues Manufacturers' catalogues have been developed. Each manufacturer product shall be pre-set and configured according to manufacturer specifications.

Personalized Libraries

1.18 Creation and Sharing

Personalized libraries can be created and shared on a network. They can also be password protected to avoid their modification.

1.19 Library Explorer

The Library Explorer manages the built-in libraries and also the personalized libraries created by the users. It is possible to insert grouped components in the libraries with variable assignments and re-use these components without having to reconfigure the variables.

Component Editor

1.20 Component Properties Window

Each component contains the same type of properties window. The properties are used for simulation (technical data), reports (catalogue information), or for communicating information (user properties defined by hyperlinks of other document types).

1.21 Component Tooltips

Detailed information can be displayed directly on the diagram or in tooltips displayed when hovering over the corresponding components on the screen (Text, video, sound, pictures and any kind of files can be launched from each component's tooltip.

1.22 Multi-selection: Editing Common Properties

In order to effectively edit multiple components in the schematic, it is possible to modify common properties simultaneously, rather than to do it one-by-one.

1.23 Component Sizing Module

Components such as pumps, motors, orifices, lines, accumulators, pistons, etc. shall have sizing sheets enabling the definition of optimal physical characteristics according to desired parameters. Mathematical formulas used by the simulator to calculate data shall also available. Users can create his calculation method based on existing equations.

1.24 Technical Data

The component's technical data shall serve as input data to the simulator. For some families of components, technical data shall be represented using either numerical values or characteristics curves, whichever suits better the corresponding mathematical models.

1.25 Data type

The component's technical data can be either constant specified by a numeric value (mass, diameter, resistance etc.) or variable characterized by a curve/signal (example: pressure loss in a valve, resistive force/torque in a motor) in time domain (evolution of room temperature). The method of creating

variables via tables Y(X) allows the SFC - Grafcet and controller to emulate any mechanism.

1.26 Photos / Images

Photos or images of components are built-in and shall be supplied with the software. The user has the option of adding other pictures or documents to each component in order to enrich the schematic description or convey any pertinent information.

1.27 Bill of Material and References

It shall be possible to reference each component on the schematic and to recall on a table the list of components based on those references. Thus, it shall be possible to navigate between the BOM and the schematics using hyperlinks.

1.28 Cross-Section Animation

The cross-section animation shows the internal behavior of certain components synchronized with circuit simulation.

1.29 Component Modeling

Component Modeling is more visual and tends to be as close as possible to manufacturer specifications. The dynamic part of most of the components is considered mathematically as smooth and can be represented by differential equations. Component performance and efficiency can be represented as parameterized curves or table that represent the global input-output maps.

1.3 Fluid modeling

Fluid modeling can also be based on a data mapping which explains viscosity, density and Bulk modulus as a function of temperature and pressure. Fluids can be mixed by using the multi-circuits capability. The characteristics of mixed fluids must be known by the user and are not computerized automatically.

Variable Management

Variable Types

The variable types shall be compliant to the IEC 61131-3 international standard. All data types shall be supported.
Structure of variables (global, internal, components, emitters, receivers)
The communication between the various technologies shall be achieved by variable assignments.

Variable Manager (creation, modification, filter, etc.)
This module offers a non-modal window that makes it possible to monitor all the variables used by the simulator. The use of filters allows targeting specific variables.
Interfaces between the Software and other equipment.

Virtual Machine
The software can act as a virtual machine and communicate with other equipment either through OPC client or an I/O interface card.

OPC- Client/Server Module
The software shall allow communicating between any peripheral devices for which an OPC server or client is available.

Simulation

General Simulation
When a project is simulated, all symbols in the system shall become animated or colored.
The animations shall be synchronized and the SFC – Grafcet/Ladder shall be activated. Plotters and dynamic measuring instruments are

refreshed. Simultaneously, the user can mouse click on the controllable elements. The results of the multi-technology simulation shall be shown through the animated schematics. The user can plot, register, and analyze data calculated by the simulator. All interactions are available during simulation, such as fixing parameters of components using the mouse: circuit controls, external peripheral controls (joystick, wheel, pedal, PLC, etc. Dynamic measuring instruments can be used in order to measure and display data.

Modes
System simulation can be launched in normal speed simulation mode; this means using the full calculating capacity of the computer without surpassing the real time. The simulation can be switched to the step-by-step (so that screenshots may be taken) or slow-motion mode.

Simulation Pace Time
The user can now select the simulation time step from 10 milliseconds to 0.1 milliseconds allowing for customizable simulation ranging from a complete system simulation to a very precise component-level analysis.

Diagnostics
It is possible to declare maximum values for each component and values not to exceed (example: pressures, temperatures, loads). In case of breach, each faulty component will be visually and dynamically indicated on the schematic or eventually failures on component can be triggered.

Message Window
The window keeps the user informed of any problems or errors encountered by the editor or simulator. Hyperlinks direct the end user towards the faulty component onto the diagram.

Visual Indicators: Data Display (Dynamic Measuring Instruments and Plotter)
The output values calculated by the simulator can be viewed via dynamic measuring instruments, which can easily be inserted in the circuit without modifying its conception, or via a plotter dedicated to fluid or electrotechnical data. These shall allow the tracing of any variables at the component level, such as pressures, flows, temperatures, loads, intensities, power, etc. It shall be possible to view the direction of the flow with arrows and/or animation. The gravity field can be modified.

Hydraulic and Pneumatic Simulation
Temperature, flow, and pressure values can be calculated during simulation. For oil, the evolution of viscosity and density is calculated as a function of temperature. The pressure losses are calculated in the lines as a function of the fluid type and material. Gravity can also be considered. Rigid or flexible lines can also be modeled.

Visualization of Pressures and Flows
Configuration of colors exists by default and can be configured. For training purpose, it can be configured to not show any color in order to hide visual information to the trainees.

Animated Lines and Detection of Open Paths
The software shall offer an animated view of line flow, as well as a diagnostic of open paths or connections during simulation. This allows the user to click on a line and, from this selection, be able to view all lines that are linked via components open to the initial line. The selection then becomes underlined, including the initial line, while the other lines become dark grey. In simulation mode, a new button can be added to the simulation toolbar.

	Electrotechnical Simulation			
	The voltage and current values are calculated by the simulator. Voltage losses can be calculated in electric wires as a function of the type of material used. It is also possible to measure phase displacements.			
	One-Line Diagram Simulation			
	Three-phase one-line components have such behaviour during the simulation that allows users to view the global functioning of an electric circuit. Load monitoring functions on disconnections and circuit breakers shall allow to view the functioning state of the circuit.			
	Troubleshooting			
	The modelling of each hydraulic, pneumatic, and electrotechnical components integrates faults that can be triggered during the system simulation. A set of troubleshooting tools (multi-meter, hydraulic tester, pressure gages, and thermometer) shall be used to diagnose and repair the problems. Users can quickly and easily perform "What-if" scenarios to resolve potential problems. It is possible to disconnect wires or lines to isolate parts of a circuit, perform measurements, and repair or replace components to solve suspected failures. The set of realistic measuring tools shall include the Multimeter clamp, Oscilloscope, Hydraulic Tester, Multimeter, Thermometer and Manometer to allow circuit measurement of the electric current without having to disconnect wires.			
	Teachware			
	Course material shall be made available for each technology. It shall provide teachers and trainers with the essentials for preparing course curriculum. It shall include guides, manuals, lectures, videos and lab notes for all levels of discipline.			
	Other Tools			
	Creating Teachware			
	The Creating Teachware module shall allow defining interactive activities for existing projects and connecting them to other applications. It also can automate repetitive tasks without programming knowledge.			
	Video Recorder			
	It shall be possible to record and create AVI files with voice that register what the screen is showing. There is also an option to synchronize the recording with the simulation.			
	Sound			
	The use of sound effects and spoken text is possible during simulation. This allows the creation of fully documented didactic files including sound and animation.			
	Black Box and Function Box			
	These components shall allow the creation of controllers with visual animation.			
	Hyperlinked Documents			
	The software shall allow the conception of structured courses in a vertical or transverse way. It is possible to navigate between projects, like on an Internet browser. The projects can be hyperlinked with each other.			
	Demonstration Files			
	Several demonstration circuits shall be made available for each technology and can be modified by the user.			
	The following functions shall be available also to ensure greater user flexibility:			

	• Translation Manager: Display content visible on schematics or tooltips in the chosen language • Display functions: references, satellites, highlight links, etc. • Navigation by links created between components and documents • Layer selection and display Printing project documentation			
2.	**Intelligent Building Engineering Technology Training Equipment** (Network Communication System, Comprehensive Cabling System) The Equipment must be Compliant to WorldSkills ASEAN Skills Standard **TECHNICAL DESCRIPTION:** • The trainer is a Hybrid Network Communication and Comprehensive Cabling System has can perform network and cabling, LAN, WAN up to Fiber Optic Experiments. • The equipment is composed of building model platform, system device, auxiliary material and tools. • The building model platform mainly includes platform frame, mesh mounting plate, power input protection and alarm unit, standard 19-inch open rack and chassis. • System devices includes power, network, monitoring, display, input and output devices etc.; auxiliary material includes wire, fasteners. • Tools includes ladder, commonly used and special tools. • The software is composed of special system software and general monitoring software. • The students can do operation of "network communication system" and "comprehensive cabling system" such as installation, cabling, wiring, configuration, measurement, analysis, debugging, maintenance and etc., to understand each system (buildings, equipment, management, vertical and horizontal lines, workspace) in the actual application and master basic technical points. • The capabilities of students' teamwork, communication, planning organization, project implementation will be tested and improve comprehensive vocational skills. **THE EQUIPMENT SHALL HAVE TECHNICAL PARAMETERS:** • Power input: single-phase three-wire, AC220V + / - 10%, 60hz; • Safety protection: grounding, leakage (action current ≤ 30mA), overvoltage, overload, short circuit, and over-step trip; • Power consumption: ≤ 400W; • Machine weight: ≤ 200KG; • External dimension (width x depth x height) : 2006 mm (single room) x 1003 mm x 2410 mm.			

THE EQUIPMENT SHALL HAVE TECHNICAL CONFIGURATION:		
1. Bench Frame	1	set
2. Mesh Installation Plate	1	batch
3. Simulated Beam-Column	2	pc
4. Power Input protection and alarm unit (Current limiting component, leakage protection module and alarm auxiliary contact head)	1	set
5. 19 inch open type rack	1	set
6. 19 inch open type chassis (4U, wall-mounted type)	1	set
7. End-user information box	1	set
8. Data/ voice module	1	pc
9. Cable TV signal module	1	pc
10. Weak current monitoring/ security module	1	pc
11. PDU power strip plate	1	pc
12. Non-shielded RJ45 socket module	12	pc
13. 24 bit RJ45 Socket	2	pc
14. Coils	8	pc
15. Optical Fiber Module	2	pc
16. Fiber Optical Transceiver	2	pc

17. 24 port Ethernet exchange	1	set	
18. SPC exchange	1	set	
19. Telephone	2	pc	
20. LCD TV	1	set	
21. Network infrared camera	1	set	
22. AV RF Cable	50	meter	
23. Multimode optical cable (12 core)	50	meter	
24. Optical fiber pigtail	24	pc	
25. RJ45 Network Jump cable UTP (2m)	24	pc	
26. Voice jump cable UTP (2m)	12	pc	
27. SC optical fiber jump cable (3m)	8	pc	
28. IDC voice module (4 pair)	40	pc	
29. IDC voice module (5 pair)	10	pc	
30. Non-shield RJ11 socket	100	pc	
31. Non-shield RJ45 socket	100	pc	
32. 110 jumper clamp and testing experiment modu	1	set	
33. RJ45 Network cable making and testing experi	1	set	
34. Bridge and related accessories	1	batch	
35. PVC trunking and related accessories	1	batch	
36. Bellow and related accessories	1	batch	
37. Fixed part	100	pc	
38. Self-tapping screw	1	batch	
39. Flexible cord 0.3mm2 (yellow, green, red, blue, black)	1	batch	
40. Flexible cord 1.0mm2 (red, black, yellow, green)	1	batch	
41. Video cable SYV75-3	1	batch	
42. BNC Video source JS-3 (metric)	1	batch	
43. Cable TV F source	1	batch	
44. DC power source	1	batch	
45. Solder wire	1	roll	
46. Rubber tape	2	roll	
47. Marking tube	1	roll	
48. Ribbon	4	pack	
49. Trestle ladder	1	pc	
50. Working bench	1	set	
51. Vice	1	pc	
52. Toolbox	1	pc	
53. Transparent component box	1	pc	
54. Digital Multimeter (9v battery)	1	pc	
55. PN-S (9v battery)	1	pc	
56. Optical power meter (9v battery)	1	pc	

THE EQUIPMENT SHALL HAVE THE FOLLOWING TRAINING CONTENTS:

- System installation, cabling, wiring, programming, commissioning, operation, maintenance, and repair

- Installation of open type rack, chassis, distribution rack and other infrastructure

- Installation and cabling of the bridge and related accessories

- Installation and cabling of trunking and related accessories

- Installation and cabling of bellow and related accessories

- Installation of various integrated cabling device and module

- Connector pressing, jumper and various bus making and testing

- Installation of Information module

- Terminal connection and testing of distribution rack

- Installation and testing of copper cable management system

- Installation and testing of optical cable management system

- Quick cold pressing terminal connection and testing of cable and terminator

- Fiber-optic transceiver connection and signal conversion

- Installation and testing of network communication management system

- Ethernet switch LAN connection and distribution

- Connection and debugging training of telephone program-controlled switch and telephone

- Installation and testing of network camera, televisions, telephones, and other residential terminal equipment - Residential intelligent monitoring and management - Cable link speed and quality testing - Copper cable, fiber optic cable fault troubleshooting	
3. **Intelligent Building System Integration and Internet of Things Technology Training Equipment** Power input: single phrase and three wires /AC220V/60Hz Safety protection: Grounding/leakage (action current ≤30mA)/ overvoltage/overload/short circuit, scram protection Overall power consumption: ≤100W (don't contain computer, computer≤300W） AC power output: two route isolation DC power output: DC5V/2.5A、DC12V/2A; DC24V/1.5A; Adjustable DC power output: DC0-30V/2A； Total weight: 200 kg Dimension (length * width* height): a) 1580mm×720mm×1760mm （Frame part） b) 2040mm×720mm×1760mm （fixed with both sides Spherical camera and warning lights) The equipment shall have the following training contents: 1. System wiring plugging, programming, commissioning, operation, maintenance and repair 2. High-definition coaxial video signal and hard disk recorder connection 3. High-speed dome camera, infrared gun-type camera and monitor and hard disk recorder connection and monitoring 4. Through hard disk recorder control high-speed dome camera PTZ movement and lens action 5. Through hard disk recorder set and adjust the high-speed dome camera PTZ presetting and cruise 6. Dynamic monitoring screen changes and automatic recording of peripheral alarm 7. Passive infrared intrusion detector, active infrared detectors, sound and light alarm and hard disk recorder connection and setting 8. Video monitoring system and the surrounding security system linkage 9. LAN monitoring of network video surveillance management software 10. LonMaker software installation and Plug-in registration 11. Connection of light illumination switch, halogen lamp and the DDC control module and Event Scheduler function module schedule programming 12. Connection of light sensor, LED light, and DDC control module and analog input and output programming of Universal Input function module 13. Connection of passive infrared detectors, fluorescent lamp and DDC control module and delay programming of Universal Input function module 14. Connection of triple scene button, fluorescent tube and DDC control module and digital logic programming of State Machine function module 15. Connection of emergency switch and DDC control module and analog logic programming of Analog Function function module 16. Light intensity sensor detection training based on CAN bus and GSM communication 17. Air quality sensor detection training based on CAN bus and GSM communication 18.Air temperature and humidity sensor testing, and training based on CAN bus and GSM communication 19.Soil temperature and humidity sensor testing, and training based on CAN bus and GSM communication 20.Carbon dioxide sensor testing, and training based on CAN bus and GSM communication 21.PM2.5 detection training based on CAN bus and GSM communication 22. Weight sensor detection training based on CAN bus and GSM communication 23.Flame sensor detection training based on CAN bus and GSM communication 24.Human pyroelectric sensor detection training based on CAN bus and GSM communication	

25. Security detection training based on CAN bus and GSM communication
26. Electric curtain control training based on CAN bus and GSM communication
27. Lighting control training based on CAN bus and GSM communication
28. Air valve control training based on CAN bus and GSM communication
29. Water valve control training based on CAN bus and GSM communication
30. Plant watering control training based on CAN bus and GSM communication
31. Fish feeding control training based on CAN bus and GSM communication
32. Air purifier control training based on CAN bus and GSM communication
33. Cold and warm fan control training based on CAN bus and GSM communication
34. LCD monitor control training based on CAN bus and GSM communication
35. Electric lock control training based on CAN bus and GSM communication
36. Infrared learning and control training based on WIFI communication
37. PC monitoring training based on CAN bus
38. Android monitoring training based on GSM communication
39. Intelligent household monitoring training based on WiFi communication
40. Integrated monitoring software through the video interface server connect hard disk recorder and monitor screen in real-time
41. Integrated monitoring software through the DDE interface server connect DDC host module and monitor data in real-time
42. Integrated monitoring software through the Internet of Things interface server connect the CAN bus and monitor data in real-time
43. Comprehensive integrated monitoring and management training of SAS, BAS and IOT integrated system based on intelligent building integrated monitoring software.

The training equipment shall have the following configuration:		
1. Aluminum bracket with brake universal wheel , handle	1	set
2. Fireproof board	1	set
3. Electrical box	1	pc
4. Protective barrier	1	pc
5. LCD 19 inch	1	pc
6. Detection actuator Function control circuit board, inductance coil, contactor, and relay	1	pc
7. 2P air switch	3	pc
8. Leakage protection module	2	pc
9. Alarm module	1	pc
10. Self-reset button	1	pc
11. Emergency switch	1	pc
12. AC220V guide rail three-plug module	1	pc
13. AC220V guide rail two-plug module	1	pc
14. DC0-30V adjustable switch power	1	pc
15. Adjustable potentiometer	1	pc
16. DC digital voltage ammeter	1	pc
17. Four-layer alarm light	1	pc
18. 10A safety plug terminal	1	pc
19. 5A safety plug terminal	1	pc
20. hard disk recorder	1	pc
21. SATA hard disk	1	pc
22. LCD monitor	1	pc
23. High speed dome camera	1	pc
24. Infrared camera	1	pc
25. Self-lock button with DC24V green indicator light Simulate passive curtain detector and active detector	2	pc
26. Relay switching circuit board 2 pcs	1	pc
27. DC12V buzzer 1 pc	1	pc
28. Video monitoring management software 1 pc	1	pc
29. Video Monitoring Wireless client software 1 pc	1	pc
30. Host monitor module 1 pc LonWorks bus DDC	1	pc
31. LON network adapter 1 pc	1	pc
32. Self-lock button with DC24V green indicator light simulate illuminous switch, passive infrared probe and emergency switch	3	pc
33. Self-reset button with DC24V red indicator light	3	pc
34. DC24V yellow indicator light	4	pc

35. Relay switching circuit board	10	pc	
36. Potentiometer simulate illuminous sensor	1	pc	
37. DC voltage adjustment conversion circuit board	1	pc	
38. DC voltage input transmission digital tube simulate LED light	1	pc	
39. DDC program software Plug-in program LonMaker3.12	1	pc	
40. Embed host board ARM	8	pc	
41. AC electric, water valve and air valve module	1	pc	
42. Illuminous sensor and electric curtain module	1	pc	
43. PM2.5 air quality sensor module	1	pc	
44. Air, earth temperature and humidity sensor and plant irrigation module	1	pc	
45. Pyroelectric sensor module	1	pc	
46. Pet feed and weighing module	1	pc	
47. Fire and carbon dioxide sensor module	1	pc	
48. Security and access control module	1	pc	
49. CAN communication adapter	1	pc	
50. Wi-Fi directional infrared controller	1	pc	
51. Wireless router	1	pc	
52. USB wireless network card	1	pc	
53. GSM module	1	pc	
54. WiFi touch screen terminal Android system	1	pc	
55. Self-lock button with DC6.3V green indicator light simulate passive curtain probe	1	pc	
56. Self-reset button with DC6.3V red indicator light	2	pc	
57. DC6.3V yellow indicator light	7	pc	
58. DC6.3V green indicator light	1	pc	
59. DC6.3V red indicator light	1	pc	
60. PM2.5 detector simulator potentiometer A/D transmit , RS232 communication protocol output	1	pc	
61. Carbon dioxide sensor simulator	1	pc	
62. Pressure transmit simulator	1	pc	
63. Air conditioner, air purifier and TV simulator infrared remote receive	1	pc	
64. infrared remoter	1	pc	
65. ARM emulator	1	pc	

4.	**Refrigeration and Airconditioning for Skills Competition** The Equipment must be Compliant to WorldSkills ASEAN Skills Standard			
	General Description:			
	The equipment shall consist of operation bench and training bench	1	set	
	The operation bench shall be quipped with various tools. The training bench shall be made of aluminum alloy training bench, control module and refrigeration system components.	1	set	
	A mesh plate shall be installed on the aluminum alloy bench which shall facilitate the installation of pipelines, components and the electrical wiring.	1	pc	
	The control module shall be equipped with two digital display temperature controllers to control the temperature of the two water tanks in real time.	1	pc	
	The installation of two pressure gauges can intuitively see the operating condition of the equipment.	1	pc	
	Through this equipment, the technology of pipeline making, equipment installation, electrical wiring, operation and debugging can be learned, which can strengthen students' understanding of the refrigeration system and contribute to the comprehensive quality cultivation.	1	pc	
	Technical parameters: 1. Input power: AC 220V 10%, 60Hz 2. Input power: 0.6 kw 3. Working Environment:			

Temperature: -10℃～+40℃
Relative humidity: ≤90% (+20℃)
Altitude: ≤4000m
Clean air, no corrosive and explosive gas, no conductive and insulating dust

4. Dimension: L*W*H =1500 mm × 650 mm × 1800 mm
5. Safety:
       with grounding protection
       leakage protection and its safety comply with relevant national
       standards
       High-insulation safety sockets and high-strength safety test leads with
       insulating sheaths will be used.	

General Conditions: • Suppliers must submit Letter of intent to join the bidding with product catalog of item/s being offered. • Must attached site inspection certification issued by the end-user. • Suppliers may offer higher specifications provided it will not affect its compatibility, functionality, purpose & its related laboratory experiments with the other specifications items. Below the minimum required specifications will be ground for disqualification/blacklisting. • All electrical wirings for the installation of the equipment as well as the LAN connections & other incidental costs needed to make the equipment functional should be shouldered by the supplier. Other Terms and Conditions: • Equipment must be supplied with training manuals/curriculum in English. Note: Must attach the curriculum with objectives and skills." • Bidder must submit brochure/catalogue indicating the brand name & model of bid item/s as additional technical requirements, failure to submit will be grounds for disqualification. • Bidder must have a letter of exclusivity from the manufacturer for the purposes of after-sales training, warranty and preventive maintenance of the equipment. • Bidder must have a training center with in-house Trainor Certified by the manufacturer for the pre- training to be conducted @ the bidder's training center also for equipment testing & checking by the end – user prior to delivery at Tarlac State University. • Bidder must conduct aftersales training at Tarlac State University after completion of delivery and installation. • Bidder must attach pictures of their training center and pictures of aftersales training of faculty conducted at their training center as additional technical document requirements. • Bidder must have at least 1 set demo unit of the item/s offered presented during bid opening or post qualification. • Bidder must be an Authorized Distributor/ Reseller of the bid item/s & authorize to provide technical support & must attach documents to support such claim. • Supplier shall provide technical personnel - Registered Engineers/Technician or equivalent to perform maintenance check of the equipment if needed. Supplier confirms the availability of manpower to perform such functions. • Supplier should attach the list of manpower requirements. AFTER SALES SERVICE: 1) Free trainers' training at supplier's training center before the delivery of the equipment or at Tarlac State University upon delivery and installation 2) Free semiannual training with certification, on request 3) Free product inspection, on request 4) Free consultation / seminar, on request 5) Free product demonstration on selected item, on request	

Attached herewith are the manufacturer's product literature(s) and certification(s) that we are authorized to sell the goods.

We certify that the foregoing information and the supporting documents are true and correct.

<div align="center">

[*Signature*]
[Name of Authorized Signatory]
[*Position/Title of Authorized Signatory*]

</div>

Omnibus Sworn Statement

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

A F F I D A V I T

I, *[Name of Affiant]*, of legal age, *[Civil Status]*, *[Nationality]*, and residing at *[Address of Affiant]*, after having been duly sworn in accordance with law, do hereby depose and state that:

2. ***Select one, delete the other:***

   If a sole proprietorship: I am the sole proprietor or authorized representative of *[Name of Bidder]* with office address at *[address of Bidder]*;

   If a partnership, corporation, cooperative, or joint venture: I am the duly authorized and designated representative of *[Name of Bidder]* with office address at *[address of Bidder]*;

3. ***Select one, delete the other:***

   If a sole proprietorship: As the owner and sole proprietor, or authorized representative of *[Name of Bidder]*, I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for *[Name of the Project]* of the *[Name of the Procuring Entity]*, as shown in the attached duly notarized Special Power of Attorney*;

   If a partnership, corporation, cooperative, or joint venture: I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for *[Name of the Project]* of the *[Name of the Procuring Entity]*, as shown in the attached *[state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)]*;

4. *[Name of Bidder]* is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board;

5. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

6. *[Name of Bidder]* is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

7. ***Select one, delete the rest:***

   If a sole proprietorship: The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   If a partnership or cooperative: None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

If a corporation or joint venture: None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

8. *[Name of Bidder]* complies with existing labor laws and standards; and

9. *[Name of Bidder]* is aware of and has undertaken the following responsibilities as a Bidder:

    a) Carefully examine all of the Bidding Documents;

    b) Acknowledge all conditions, local or otherwise, affecting the implementation of the Contract;

    c) Made an estimate of the facilities available and needed for the contract to be bid, if any; and

    d) Inquire or secure Supplemental/Bid Bulletin(s) issued for the *[Name of the Project].*

10. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

_____
Bidder's Representative/Authorized Signatory

SUBSCRIBED AND SWORN to before me this ___ day of *[month] [year]* at *[place of execution],* Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. _____ and his/her Community Tax Certificate No. _____ issued on ____ at _____.

Witness my hand and seal this ___ day of *[month] [year].*

NAME OF NOTARY PUBLIC
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. _____ *[date issued], [place issued]*
IBP No. _____ *[date issued], [place issued]*

Doc. No. _____
Page No. _____
Book No. _____
Series of _____

[*Bidder's Letterhead*]

<div align="right">[Date]</div>

FINANCIAL BID FORM

To: Tarlac State University
Re: Invitation to Bid No.

Having examined the Bidding Documents [*insert if any or delete, if none:* including Bid Bulletin Numbers *[insert numbers],* the receipt of which is hereby duly acknowledged], we, the undersigned, offer to *[supply/deliver/perform] [description of the Goods]* 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.

If our Bid is accepted, we commit to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we undertake to provide a performance security in the form, amounts, and within the times specified in the Bidding Documents.

We agree to abide by this Bid for the Bid Validity Period specified in **ITB** Clause 14.2 and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the Lowest Calculated Bid or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements as per **ITB** Clause 5 of the Bidding Documents.

We likewise certify/confirm that the undersigned, *[for sole proprietorships, insert:* as the owner and sole proprietor or authorized representative of [*Bidder*], has the full power and authority to participate, submit the bid, and to sign and execute the ensuing contract, on the latter's behalf for the [*Name of Project*] of the Tarlac State University*] [for partnerships, corporations, cooperatives, or joint ventures, insert:* is granted full power and authority by the [*Bidder*], to participate, submit the bid, and to sign and execute the ensuing contract on the latter's behalf for [*Name of Project*] of the Tarlac State University.

We acknowledge that failure to sign each and every page of this Financial Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Dated this _____ day of _____ 20_____.

_____   _____
          [signature]   *[in the capacity of]*

Duly authorized to sign Bid for and on behalf of _____

[*Bidder's Letterhead*]

[*Date*]

To: Tarlac State University
Re: Invitation to Bid No.

SCHEDULE OF PRICES

Item No.	Description	Qty.	Unit	Unit Price	Total Price
1.	Automatic Production Line Training Equipment	1	lot		
2.	Intelligent Building Engineering Technology Training Equipment	1	lot		
3.	Intelligent Building System Integration and Internet of Things	1	lot		
4.	Refrigeration and Airconditioning for Skills Competition	1	lot		
				TOTAL BID PRICE	

[*Signature*]
[Name of Authorized Signatory]
[*Position/Title of Authorized Signatory*]