QUAID-E-AWAM UNIVRSITY OF ENGINEERING, SCIENCE & TECHNOLOGY,
NAWABSHAH
(Say No to Corruption)

TENDER NOTICE

01. Sealed bids are invited from Importers of Scientific Equipment / Suppliers having at least 5 years of Experience in related field on C & F basis with 05% **bid security** in the shape of pay order / bank Draft in the name of Director Finance, QUEST, Nawabshah for the supply of **Computer Controlled PHOTOVOLTAIC SOLAR ENERGY UNIT** or equivalent laboratory Equipment with installation , commissioning , Training , parts service warranty for Energy Environment Engineering Deptt: of Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah.

2. **Eligibility: Registered with Tax Authorities (** Income Tax , GST , Custom).

3. **Method of Procurement.** The University would adopt **Single Stage – Two Envelop Procedure** for selection of firm. The bidder should submit Two separate sealed envelopes. One envelope should contain the Technical Proposal and the other envelope should contain the Financial Proposal. Both envelopes should be clearly marked "Technical Proposal" and "Financial Proposal".

4. **Bidding/Tender Documents:**

Tender Documents with detailed specifications can be obtained from the office of the undersigned against the paid challan of **Rs.1000/-** in University Account 44-8 NBP , Engineering University branch , Nawabshah (Non-Refundable). The bid along with required

Date of Issuance: Documents will be issued from the first day of publication in Newspapers of this advertisement up to 27-07-2017
Date of Submission: . 28-07-2017 (12:00 Noon)
Date of Opening: On same day i.e 28-07-2017 (01:00 PM).

5. **Place** of issuance, submission, inquiries and opening will be FINANCE WING, ADMINSTRATION BLOCK, SAKRAND ROAD, NAWABSHAH (67480), SINDH.

6. **Terms & Conditions.**

Under following conditions bid will be rejected:-

(i) Conditional and telegraphic bids/tenders;
(ii) Bids not accompanied by bid security of required amount and form;
(iii) Bids received after specified date and time.
(iv) Black listed firms or permanently bared by the PPRA or SPPRA Authorities.
(V) Firms in litigation.

7.. Procuring Agency reserves the right to reject all or any bids subject to the relevant provisions of Sindh Public Procurement Rules 2010.

08. The Tender Document can be downloaded from University website (www.quest.edu.pk).as well as SPPRA ,Karachi website (www.sppra.gov.pk)..

DIRECTOR FINANCE

5/7/17.

ISSUED ON: _____ ISSUED TO: _____

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY NAWABSHAH

TENDER DOCUMENTS

For Supply of

COMPUTER CONTROLLED

PHOTOVOLTAIC SOLAR ENERGY UNIT

FOR ENERGY ENVIORMENT ENGG: Deptt: under HEC & QUEST Sponsored Funding

INSTRUCTIONS TO TENDERS
&
TERMS AND CONDITIONS

INSTRUCTIONS TO TENDERS AND TERMS & CONDITIONS.

1. **BIDS:**

Rates shall be for the supply of material described in the Bill of Quantities at QUEST Nawabshah, meeting the following conditions;

1.1 Quotation must be in DUPLICATE and should remain valid for 90 days from the date of the submission of tenders.

1.2 Telephone/telex/fax/telegraphic tenders shall not be entertained.

1.3 Bidders must have an office and workshop / service center facilities preferably in Karachi failing which their offer will not be considered.

1.4 Bidders must have factory-trained engineers to provide after sales services.

1.5 After opening of tenders no change is allowed to be made in the tender documents.

1.6 All taxes (if any) including GST should be included in the quoted price of items.

1.7 No advance payment shall be made against the purchase order.

1.8 All the information provided in the bid should also be adequately supported by relevant documents and technical brochures. Bidders may attach documents highlighting the competitive edge and unique features of their proposals.

1.9 Incomplete tenders will not be acceptable.

1.10 The Procuring Agency reserves the right to accept or reject any or all the bids or increase or decrease the quantity of items..

1.11 In case of agents bidding for the tender, they must enclose original Proforma Invoice/Fax copy/Quotation from their Principals failing which their offers may be ignored.

1.12 The agent must **submit following documents along** with their offer failing which their offer will be rejected.

1.12.1.1 List of clients in Pakistan for a similar work / supply.

1.12.1.2 ***The bidder has to provide certificate that all*** **items** ***are new and up to the required standard.***

1.12.1.3 Non-Black List Affidavit / Certificate (confirming that bidder has never been black listed from any Government/Semi Government organization).

1.12.1.4 Bidder will provide Bank Statement of last two years which shows its Financial Position in the market.

1.12.1.5 Each page of Bidding Document shall be signed by the C.E.O or authorized officer of the Firm with Seal (attach CNIC & Service or visiting Card) of concerned) in case of noncompliance Bidding Document will be assumed as incomplete and may lead to disqualification of Bid.

1.12.1.6 Bid will be assumed to cover Freight charges , local Transport, Marine & other accidental Insurance of equipment /installation .

1.12.1.7 A separate affidavit shall be submitted for Non litigation or scam.or fraud.

1.12.1.8 Bid shall cover Tariff, Custom Duty, other applicable taxes ,installation , Commissioning charges , local transport , marine / accidental insurance , operational software with rights (if) and training .

1.12.1.9 The Supplier shall provide original copy of Operating software of equipment.

1.12.1.10 Supplier will provide original Booklet printed by manufacturer for guidelines and other reasons.

1.12.1.11 Bid shall be expressed in US $ /EURO ..

1.12.1.12 Other essential extra accessories (if) available in original packing or have been given by manufacturer then it will be responsibility of supplier to hand over in original packing to end user / purchaser without any excuse or charging any amount.

1.12.1.13 Suppliers shall provide a list original from manufacturer of accessory , chemicals , test articles etc received with consignment .

1.12.1.14 At least Pakistan Engineering Council registered Engineer shall be hired by the suppliers and proof shall be given to :

1.12.1.15 Case of payment will be processed after availing no objects Certificate from End User Department.

1.12.1.15 Case of payment will be processed after availing no objects Certificate from End User Department.

2. EARNEST MONEY

The tenderers should submit their bid along with a Demand Drafit of 5% of the Tender Cost as Earnest Money in the name of Director Finance, Quaid-e-Awam University of Engineering, Science and Technology Nawabshah as per ANNEXURE-D.

3. VALIDITY OF PRICES

The prices quoted should be valid for a period of at least 90 days from the date fixed for opening of tenders.

4 SIGNING OF THE AGREEMENT

Within 14 days of the issuance of the letter of intent / Purchase Order the successful bidder will be required to sign a Contract Agreement with the purchaser (i.e., The QUEST Nawabshah) for the supply of such quantity in whole or in part of the tendered stores as clarified in the letter of intent / Purchase Order.

5 ON-ARRIVAL INSPECTION & TAKING OVER

9.1 ON-ARRIVAL INSPECTION (Where applicable)

There shall be inspection by the representative of the Purchaser on arrival of stores at consignees end in presence of representative(s) of the Contractor / Agent if any . The report of inspection which inter-alia should indicate the conditions in which each unit of package has been received will be signed by the above-mentioned representatives.

9.2 TAKING OVER (Where applicable)

Upon receipt of the items in the Warehouse of Purchaser and after final inspection by inspection agency (or agencies) nominated by the Purchaser, the Purchaser will issue a taking over certificate in which he shall certify the date on which the items have been so accepted. The taking over of damaged items during the transportation shall be withheld until it has been completely repaired / replaced and checked.

10. WARRANTY

10.1 The contractor shall issue warranty to the effect that the stores shall be fit for the particular purposes and operations.

10.2 The contractor shall guarantee supply of good quality stores in accordance with the specifications and that stores shall be brand new and absolutely free from all defects in materials quality and workmanship. In case of defect the stores or the necessary components shall be replaced by the contractor free of cost up to the Purchaser's premises within a reasonable time.

10.3 Warranty period shall be minimum ONE Year or as per Manufacturer, whichever is higher.

12. BREACH OF CONTRACT

In case of breach of contract, the damages suffered by the Purchaser shall be recovered to the full extent from the Contractor's Performance Bond and .

13. DEFAULT-LIABILITY OF CONTRACTOR

13.1 The purchaser may upon written notice of default to the Contractor terminate the contract in circumstances detailed hereunder.

13.1.1 If in the judgment of the purchaser the contractor fails to make delivery of items within the time specified in the Contract Agreement or within the period for which the purchaser has granted extension to the contract.

13.1.2 If in judgment of the Purchaser, the Contractor fails to comply with any of the other provisions of this contract.

13.2 In the event the Purchaser terminates the contract in whole or in part, the Purchaser reserves the right to purchase upon such items and in such a manner, as he may deem appropriate. items similar to the one terminated and the Contractor will be liable to the Purchaser for liquidated damages for delay until such reasonable time as may be required for the final supply of items.

14. REJECTION

In the event any portion of the stores supplied by the contractor is found to be defective in material or otherwise not in conformity with the requirements of the contract, the Purchaser shall have the right to either to reject or to request in writing rectification of the stores, then the Contractor shall with utmost diligence and at his own expense correct the same or replace the defective stores. If the Contractor fails to do so, the Purchaser either:

(i) Opt to replace or rectify such defective stores and charge to the Contractor the excess cost occasioned to the Purchaser plus (15%) fifteen percent.

(ii) Terminate the Contract for default.

(iii) In the event the Contractor is not able to rectify or replace the rejected stores within reasonable time, the Purchaser reserves the right to acquire the said stores at a reduced price considered equitable under the circumstances. Nothing in the clause shall affect any claim by the Purchaser under any clause of the Terms & Conditions.

15. DELAY IN DELIVERY- LIQUIDATED DAMAGES

15.1 If the Contractor fails to deliver the items with the time laid down in the Contract Agreement or any extension thereof, there shall be a deduction from the Contract Price, as liquidated damages, a sum of 2% of total value per month or a part of the month contract price of each unit of the undelivered stores for each calendar month of delay. Total liquidated damages payable to the Purchaser shall not in any case exceed by five percent (5%) of the Contract Price of the unit or units so delayed and such deduction shall be in full satisfaction of the Contractor's liability for the said failure. The amount will be recovered from the Local Agent's Commission/Performance Bond.

15.2 Should the progress of the contract at any time be lagging behind the programme agreed between the Purchaser and the Contractor, the Purchaser shall notify the Contractor in writing and the Contractor shall thereupon take such steps as he deem fit to expedite the progress of the Contract.

16. PERIOD OF GUARANTEE

16.1 The term period of Guarantee shall mean the period of twelve (12) months or as per clause 11.3, from the date on which the items have been put into operation. In any case this period shall not exceed eighteen (18) months from the date of the taking over certificate.

16.2 During the period of guarantee the Contractor shall remedy all defects in design materials and workmanship that may develop under normal use of the said stores upon written notice from the Purchaser who shall indicate in what respect the items is faulty.

16.3 The provisions of this clause included all the expenses that the Contractor may have to incur for delivery of such replacement parts, material of items up to Purchaser's premises.

17. ACCEPTANCE TERMS

The submission of the tender against the tender inquiry by the tenderer means that the tenderer has read and accepted the terms and conditions relating to all the tender document and annexure(s) and has thoroughly examined the specifications and particulars in the tender inquiry.

18. DISQUALIFICATIONS

Offers are liable to be rejected if, there is any deviation from instructions as laid down in the bid document i.e.

18.1 Technical details/brochures and literature pertaining to the offered items are not attached.

18.2 Tenders are submitted without the required earnest money.

18.3 Offers are received after specified date and time.

18.4 Specification and other requirements are not properly adhered to or manufacturer's brochures show specifications different from those given in the proposal.

18.5 Authorized dealership certificate from the principal is not attached.

18.6 **GST/NTN** certificate is not attached.

18.7 Any other major discrepancy found in the proposal.

19. PAYMENT

19.1 70% payment shall be released at the time of delivery of items, 30% will be released after installation and getting satisfactory certificate from the purchaser / head of the department, no part payment will be allowed.

Contract Agreement

THIS CONTRACT is made at _____on _____ day of 2017_. Between the QUEST Nawabshah (hereinafter called the "Purchaser") of the First Part and M/s ..... a firm registered under the laws of Pakistan and having its registered office at ..... (Hereinafter called the "Supplier") of the Second Part.

WHEREAS the Purchaser invited bids for procurement of items, in pursuance whereof M/s..... being the supplier/ manufacturer/ authorized Agent of ..... (Item name) in Pakistan and ancillary services offered to supply the required item (s); and

Whereas the Purchaser has accepted the bid by the Supplier for the supply of .....(item name) and services in the sum of Rs.....(amount)-(Rupees.....) cost per unit, the total amount of .....(quantity of item).....(item name) shall be Rs.....(amount)-(Rupees.....)

NOW THIS CONTRACT WITNESS AS FOLLOWS:

1. In this Contract words and expressions shall have the same meanings as are respectively assigned to them in the Terms and Conditions of Tender Form and this Agreement.

2. The following documents form and be read and construed as integral part of this Contract, viz:

   a) the Tender Form and the Price Schedule submitted by the Bidder,
   b) the Schedule of Requirements;
   c) the Technical Specifications;
   d) the Terms and Conditions of Contract;
   e) the Purchaser's Notification of Award (Supply order).

3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide items and Services and to remedy defects therein in conformity in all respects with the provisions of this Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the items and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the time and in the manner prescribed by this Contract.

5. This Contract shall be governed by the laws of Pakistan and the courts of Pakistan shall have exclusive jurisdiction.

IN WITNESS Whereof the Parties hereto have caused this Contract to be executed at the place and shall enter into force on the day and year first above mentioned.

Signed/ Sealed by the Supplier/ authorized Agent	**Signed/ Sealed by Purchaser**
1. _____	1. _____
2. _____	2. _____

WARRANTY / GUARANTEE CERTIFICATE

Firm's Name _____

Contract No. _____

1. I/We hereby guarantee that the items supplied against the above contract are in accordance with the relevant specifications and terms of the contract and that material used. Whether or not of our manufacture are in accordance with the latest approved standard specifications are of good workmanship/quality throughout, and that we shall replace free of cost, every article or part thereof which before use or in use, shall be defective or not within the limits and tolerance of specifications requirements, or in any way not in accordance within the terms of the contract.

2. In case of our failure to replace the defective stores free of cost within the period specified by the purchaser, we will refund the cost involved.

3. The Warranty/Guarantee will remain valid for 12 months after receipt of stores by the consignee/installation of items.

Signature : _____

Name : _____

Status in the firm : _____

Dated : _____

ANNEXURE "A"

FORM OF TENDER

Contractor/Manufacturer/Supplier

Telegraphic Address : _____

Telephone Number : _____

Fax Number : _____

To,

The Director Finance

QUEST, Nawabshah.

Dear Sir,

In response to your invitation to Tender No._____ dated _____ I/We hereby submit my/our tender in duplicate for the supply of items as per details given in the schedule hereto duly signed by us or such portion thereof as you may specify in acceptance of tender at the prices given in the said schedule and agree to hold this offer open till _____.

I/We shall be bound by a communication of acceptance dispatch within the prescribed time.

I/We have understood the Terms and conditions of Invitation to Tender and have thoroughly examined the specifications quoted in the schedule hereto and am/are fully aware of nature of items required and my/our tender is to supply items strictly in accordance with the requirements.

The Tender particulars have been furnished and signed.

Yours Faithfully

Dated: _____

Address: _____

_____

_____

ANNEXURE "B"

TENDER PARTICULARS

TENDER MUST GIVE SPECIFIC ANSWER FOR EACH ITEM AGAINST EACH OF THE FOLLOWING QUESTIONS

1. Whether Item offered conforms to particulars specified in the schedules, if not, details of deviation must be stated.

2. 2.1 Brand of items.

   2.2 Name & Address of Manufacturer
   2.3 Country of Origin of items

3. Earliest date by which delivery can be affected and complete schedule of delivery. If delivery period is different for different items, it is to be indicated item-wise. The delivery schedules offered must be guaranteed.

4. Whether specification of packing as prescribed in Tender inquiry will be adhered to.

Bill of Quantities

S #	Name of the Equipment	Qty	Rate in US $ / EURO 05 % E.M/S.D
01.	COMPUTER CONTROLLED PHOTOVOLTAIC SOLAR ENERGY UNIT, WITH SCADA OR EQUVALENT *With Installation, Commissioning, Training to staff and at least three years of parts warranty. Equivalent*	01 Complete System	

COMPUTER CONTROLLED **PHOTOVOLTAIC SOLAR ENERGY UNIT,** WITH SCADA
OR EQUVALENT

(SPECIFICATIONS)
– FOR MAIN ITEMS –

1 EESFC. Unit:

The "EESFC" unit is a computer controlled unit for the study of the conversion of solar energy into electric energy.
Anodized aluminum structure and panels in painted steel. Diagram in the front panel with similar distribution to the elements in the real unit.
This unit includes wheels for its mobility.
The unit includes:

- Two photovoltaic solar panels (polycrystalline):
  - Tempered glass modules with high level of transmissivity.
  - Encapsulating material: modified ethylene-vinyl acetate.
  - Output nominal power: 66W.
  - Area of the panel: 0.51 m^2.
  - Max. current: 3.76 A. Max. voltage: 17.53 V.
  - 36 cells, 156 x156 mm each.
- Solar simulator composed of:
  - Aluminum frame.
  - 8 Halogen lamps of 400W each one, distributed into two independent voltage regulated circuits.
  - Electrically safe.
- Ventilation system, computer controlled, that allows to analyze the temperature influence on the unit operation, formed by:
  - 4 Axial compact fans with plastic guards.
- DC load and battery charger regulator:
  - It regulates how power generated in the photovoltaic solar panels is distributed to and from the auxiliary battery and to the load. A display informs about the state of the charge, operating parameters and fault messages. The functions of the electronic protection are:
    - Overvoltage disconnection, short circuit protection of load and module, overvoltage protection at module input, over-temperature and overload protection, and battery overvoltage shutdown.
- Auxiliary battery charger:
  - It carefully assesses the battery and then delivers the optimum charge required.
- Battery.
  - Nominal voltage: 12V. Rated capacity (20 hours rate): 24A/H.
- DC loads module:
  - Metallic box with diagram on the front panel.
  - 2 Lamps of 24V.
  - One DC motor: voltage: 36V, power: 5W.
  - Rheostat of 500W.
  - Independent connection for every load with the help of the 4 positions selector:
    - Solar panels work at open-circuit.
    - Rheostat and lamps are connected directly to the solar panels. These loads can be connected individually or in parallel with the aid of manual switches.
    - The DC motor is directly connected to the solar panels.
    - The DC load is disconnected and the solar panels are directly connected to the charge regulator.
- Sensors:
  - Solar radiation sensor to study the behaviour of solar photovoltaic panels.
  - 3 "J" type temperature sensors to measure the environmental temperature, the temperature in the solar panel no. 1 and the temperature in the solar panel no. 2.
  - DC current sensor and DC voltage sensor. The value of DC power can be visualized with the software.
- The connection of solar panels in parallel or series, the measurement of the voltage and the current before or after the regulator and the regulation of the light intensity of lamps of the two independent circuits are computer controlled.
- The unit includes four blinds to reduce a direct visual contact with the halogen lamps and to reduce the direct contact with the photovoltaic solar panels when the unit is working.

The complete unit includes as well:

- Advanced Real-Time SCADA.
- Open Control + Multicontrol + Real-Time Control.
- Specialized Control Software based on Labview.
- National Instruments Data Acquisition board (250 KS/s , kilo samples per second).
- Calibration exercises, which are included, teach the user how to calibrate a sensor and the importance of checking the accuracy of the sensors before taking measurements.
- Projector and/or electronic whiteboard compatibility allows the unit to be explained and demonstrated to an entire class at one time.
- Capable of doing applied research, real industrial simulation, training courses, etc.
- Remote operation and control by the user and remote control for technical support, are always included.
- Totally safe, utilizing 4 safety systems (Mechanical, Electrical, Electronic & Software).
- Designed and manufactured under several quality standards.
- Optional CAL software helps the user perform calculations and comprehend the results.
- This unit has been designed for future expansion and integration. A common expansion is the Scada-Net (ESN) System which enables multiple

students to simultaneously operate many units in a network.

Optional (NOT included with the minimum supply):
-EE-KIT. Kit of Conversion and Consumption Simulation (AC):
Single-phase inverter.
AC Loads module:
3 lamps, 1 axial compact fan with plastic guards and 4 positions selector.
AC voltage and current sensors.
-EE-KIT2. Grid Connection Inverter Kit:
Grid Connection Inverter.
Grid Simulator (ESR).

2 **EESFC/CIB. Control Interface Box:**
The Control Interface Box is part of the SCADA system. Control interface box with process diagram in the front panel.
The unit control elements are permanently computer controlled. Simultaneous visualization in the computer of all parameters involved in the process.
Calibration of all sensors involved in the process.
Real time curves representation about system responses.
All the actuators' values can be changed at any time from the keyboard allowing the analysis about curves and responses of the whole process.
Shield and filtered signals to avoid external interferences.
Real time computer control with flexibility of modifications from the computer keyboard of the parameters, at any moment during the process.
Real time computer control for parameters involved in the process simultaneously.
Open control allowing modifications, at any moment and in real time, of parameters involved in the process simultaneously.
Three safety levels, one mechanical in the unit, another electronic in the control interface and the third one in the control software.

3 **DAB. Data Acquisition Board:**
The Data Acquisition board is part of the SCADA system. PCI Express Data acquisition board (National Instruments) to be placed in a computer slot.
Analog input: Channels= 16 single-ended or 8 differential. Resolution=16 bits, 1 in 65536. Sampling rate up to: 250 KS/s (Kilo samples per second).
Analog output: Channels=2. Resolution=16 bits, 1 in 65536.
Digital Input/Output: Channels=24 inputs/outputs.

4 **EESFC/CCSOF. Computer Control +Data Acquisition+Data Management Software:**
The three softwares are part of the SCADA system. Compatible with the industry standards.
Flexible, open and multicontrol software, developed with actual windows graphic systems, acting simultaneously on all process parameters.
Management, processing, comparison and storage of data. Sampling velocity up to 250 KS/s (Kilo samples per second).
Calibration system for the sensors involved in the process.
It allows the registration of the alarms state and the graphic representation in real time.
Open software, allowing the teacher to modify texts, instructions.
Teacher's and student's passwords to facilitate the teacher's control on the student, and allowing the access to different work levels.
This unit allows the 30 students of the classroom to visualize simultaneously all the results and the manipulation of the unit, during the process, by using a projector or an electronic whiteboard.

5 **Cables and Accessories,** for normal operation.

6 **Manuals:** This unit is supplied with 8 manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.

* References 1 to 6 are the main items: EESFC + EESFC/CIB + DAB + EESFC/CCSOF + Cables and Accessories + Manuals are included in the minimum supply for enabling normal and full operation.

EXERCISES AND PRACTICAL POSSIBILITIES TO BE DONE WITH MAIN ITEMS

1.- Identification and familiarization with all components of the unit and how they are associated with its operation.
2.- Determination of the solar panel characteristic parameters.
3.- Study of the materials that make up the solar cell.
4.- Study of the p and n sides of a solar cell.
5.- Study of the I-V and P-V curves.
6.- Study of the inverse current or the saturation current.
7.- Study of V, I and W according to different loads.
8.- Measurement of the open-circuit voltage and the short-circuit current for a solar panel with load.
9.- Measurement of the maximum power for a solar panel with load.
10.- Study of the relationship between power generated and solar radiation power.
11.- Study of the solar panel maximum power.
12.- Study of the influence of temperature on the solar panel open-circuit voltage.
13.- Determination of the photo-conversion efficiency.
14.- Study of the efficiency of the solar panels connected in parallel.
15.- Study of the efficiency of the solar panels connected in series.
16.- Study of the efficiency, depending on the temperature, of the photovoltaic system connected in parallel.
17.- Study of the operation of the photovoltaic generation system supplying power to different DC loads without an auxiliary battery.

18.- Study of the photovoltaic power generation system operation with an auxiliary battery and supplying different DC/AC loads.
19.- Study of the operation of the photovoltaic system in series/parallel with connection of different loads and without the support of the storage battery.
20.- Study of the operation of the photovoltaic system in series/parallel with connection of different loads DC and with the support of the storage battery.

Additional practical possibilities:

21.- Sensors calibration.
22.- Lamps illumination profile study
23.- Determination of the resistance of a solar cell connected in series and in parallel.
24.- Study of the parameters that define the quality of a solar cell.
25.- Study of the dependence of the voltage of open circuit (V∞) on the lumens.

Practices to be done with the OPTIONAL KIT "EE-KIT":

26.- Study of the operation of the photovoltaic system in series/parallel with connection of different loads and without the support of the storage battery.
27.- Study of the operation of the photovoltaic system in series/parallel with connection of different AC loads and with the support of the storage battery.
28.- Study of the connection of loads to an alternating voltage of 220V.

Practices to be done with the OPTIONAL KIT "EE-KIT2":

29.- Study of the inverter connected to the grid simulator.

Other possibilities to be done with this Unit:

30.- Many students view results simultaneously.
To view all results in real time in the classroom by means of a projector or an electronic whiteboard.
31.- Open Control, Multicontrol and Real Time Control.
This unit allows intrinsically and/or extrinsically to change the span, gains; proportional, integral, derivate parameters; etc, in real time.
32.- The Computer Control System with SCADA allows a real industrial simulation.
33.- This unit is totally safe as uses mechanical, electrical and electronic, and software safety devices.
34.- This unit can be used for doing applied research.
35.- This unit can be used for giving training courses to Industries even to other Technical Education Institutions.
36.- Control of the EESFC unit process through the control interface box without the computer.
37.- Visualization of all the sensors values used in the EESFC unit process.

- By using PLC-PI additional 19 more exercises can be done.
- Several other exercises can be done and designed by the user.

Optional

EE-KIT. Kit of Conversion and Consumption Simulation (AC):

Single-phase inverter:

Single-phase. 25 kHz switch mode technology. Start-up power of 200%. Short-circuit protection. High temperature protection. Overcharge protection.

Operation state indicating LED. Rear connection/disconnection switch.

AC Loads Module:

Metallic box. Diagram in the front panel.
Axial compact fan of 230V with plastic guards.
3 Lamps of 220V - 240V., power: 11W.
Independent connection for every load with the help of the 4 positions selector:
-Inverter operation with no load.
-Fan motor connected.
-One AC lamp connected.
-Two AC lamps connected in parallel.

AC voltage and current sensor. The value of AC power can be visualized with the software.

EE-KIT2. Grid Connection Inverter Kit:

Inverter used for the conversion and injection to the grid of the power generated by a simulated source of renewable energy. The simulated source is a simulator used to obtain a variable power to be injected to the grid.

The operation mode is displayed by means of an indicating LED at the front side of the housing.

It is equipped with extensive safety measures to ensure that it is immediately switched off as soon as the AC plug is removed from the wall socket or the operation of the public grid fails.

The inverter can be connected to a computer (PC) through a RS232 communication to display some parameters, such as voltage and current inputs, mains voltage and frequency, maximum AC power, Kwh, etc.

Grid Connection Inverter:

Input (DC):

Nominal power @ 25°C: 150 W. Maximum power @ 25°C: 220 W. MPP voltage: 45-125V DC. Maximum voltage: 155V DC.
Nominal current: 3A.

Output (AC):

Voltage: 230V (207 - 253 V). Maximum power, fuse: 2.25 A. Frequency: 50 Hz (49.8 ~ 50.2 Hz).

This unit is supplied with the Grid Simulator (ESR), which simulates a low power grid to inject the power generated by the inverter.

Grid Simulator (ESR):

ESR is designed to create an isolated low power grid. The unit uses a battery as voltage source and generates a sine signal of 220V/50Hz. The main features of the ESR are:

Inlet voltage source: battery of 12Vdc. Output: 220V/50Hz. Isolation transformer. Battery charger included. Protection fuses.

The user can work with this module safely. The devices included in the EE-KIT2 can be used worldwide.

TENDER SPECIFICATIONS (for optional items)

a) Industrial configuration

7 **PLC. Industrial Control using PLC** (it includes PLC-PI Module plus PLC-SOF Control Software):

-**PLC-PI. PLC Module:**

Metallic box.
Circuit diagram in the module front panel.
Digital inputs(X) and Digital outputs (Y) block: 16 Digital inputs. 14 Digital outputs.
Analog inputs block: 16 Analog inputs.
Analog outputs block: 4 Analog outputs.
Touch screen.
Panasonic PLC:
High-speed scan of 0.32 μsec. Program capacity of 32 Ksteps. High-speed counter. Multi-point PID control.
Digital inputs/outputs and analog inputs/outputs Panasonic modules.

-**EESFC/PLC-SOF. PLC Control Software.**

For this particular unit, always included with PLC supply.

Practices to be done with PLC-PI:

1.- Control of the EESFC unit process through the control interface box without the computer.
2.- Visualization of all the sensors values used in the EESFC unit process.
3.- Calibration of all sensors included in the EESFC unit process.
4.- Hand on of all the actuators involved in the EESFC unit process.
5.- Realization of different experiments, in automatic way, without having in front the unit. (This experiment can be decided previously).
6.- Simulation of outside actions, in the cases hardware elements do not exist. (Example: test of complementary tanks, complementary industrial environment to the process to be studied, etc).
7.- PLC hardware general use and manipulation.
8.- PLC process application for EESFC unit.
9.- PLC structure.
10.- PLC inputs and outputs configuration.
11.- PLC configuration possibilities.
12.- PLC programming languages.
13.- PLC different programming standard languages.
14.- New configuration and development of new process.
15.- Hand on an established process.
16.- To visualize and see the results and to make comparisons with the EESFC unit process.
17.- Possibility of creating new process in relation with the EESFC unit.
18.- PLC Programming exercises.
19.- Own PLC applications in accordance with teacher and student requirements.

b) Technical and Vocational Education configuration

8 **EESFC/CAI. Computer Aided Instruction Software System.**

This complete software package consists on an Instructor Software (INS/ SOF) totally integrated with the Student Software (EESFC/SOF).

-INS/SOF. Classroom Management Software (Instructor Software):

The Instructor can:

Organize Students by Classes and Groups.
Create easily new entries or delete them.
Create data bases with student information.
Analyze results and make statistical comparisons.
Generate and print reports.
Detect student's progress and difficulties.

-EESFC/SOF. Computer Aided Instruction Software (Student Software):

It explains how to use the unit, run the experiments and what to do at any moment.

This Software contains:

Theory.
Exercises.
Guided Practices.
Exams.

9 **EESFC/FSS. Faults Simulation System.**

Faults Simulation System (FSS) is a Software package that simulates several faults in any Computer Controlled Unit.

The "FAULTS" mode consists on causing several faults in the unit normal operation. The student must find them and solve them.

There are several kinds of faults that can be grouped in the following sections:

Faults affecting the sensors measurement:

- An incorrect calibration is applied to them.
- Non-linearity.

Faults affecting the actuators:

- Actuators channels interchange at any time during the program execution.
- Response reduction of an actuator.

Faults in the controls execution:

- Inversion of the performance in ON/OFF controls.
- Reduction or increase of the calculated total response.
- The action of some controls is annulled.

On/off faults:

- Several on/off faults can be included.

c) Higher Education and/or Technical and Vocational Education configuration

10 **EESFC/CAL. Computer Aided Learning Software (Results Calculation and Analysis).**

This Computer Aided Learning Software (CAL) is a Windows based software, simple and very easy to use.

CAL is a class assistant that helps in doing the necessary calculations to extract the right conclusions from data obtained during the experimental practices.

CAL computes the value of all the variables involved and performs the calculations.

It allows to plot and print the results. Within the plotting options, any variable can be represented against any other. Different plotting displays.

It has a wide range of information, such as constant values, unit conversion factors and integral and derivative tables.

d) Multipost Expansions options

11 **Mini ESN. Mini Scada-Net System.**

Mini Scada-Net System allows up to 30 students to work with a Teaching Unit in any laboratory, simultaneously.

The Mini ESN system consists on the adaptation of any Computer Controlled Unit with SCADA integrated in a local network.

This system allows to view/control the unit remotely, from any computer integrated in the local net (in the classroom), through the main computer connected to the unit.

Main characteristics:

-It allows up to 30 students to work simultaneously with the Computer Controlled Unit with SCADA, connected in a local net.
-Open Control + Multicontrol + Real Time Control + Multi Student Post.
-Instructor controls and explains to all students at the same time.
-Any user/student can work doing "real time" control/multicontrol and visualisation.
-Instructor can see in the computer what any user/student is doing in the unit.
-Continuous communication between the instructor and all the users/students connected.

Main advantages:

-It allows an easier and quicker understanding.
-This system allows you can save time and cost.
-Future expansions with more Units.

The system basically will consist of:

This system is used with a Computer Controlled Unit.

-Instructor's computer.
-Students' computers.
-Local Network.
-Unit-Control Interface adaptation.
-Unit Software adaptation.
-Webcam.
-Mini ESN Software to control the whole system.
-Cables and accessories required for a normal operation.

QUAID-E-AWAM UNIVESITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH.

No:QUEST/NH/DF/1039 Dated: 05-07-2017.

To,

The Director (A & F)
Sindh Public Procurement Regulatory Authority
Barrack 8 Secretariat 4A
Court Road,
Karachi.Tel: 92-21-99205356 & 99203287
Fax: 92-21-99206291

SUBJECT : **PROCUREMENT COMMITTEE.**

(COMPUTER CONTROLLED PHOTOVOLTAIC SOLAR ENERGY UNIT)

Dear Sir,

I am directed to inform you that Worthy Vice Chancellor , Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah has approved following Procurement Committee under rules of Sindh Public Procurement Regularity Authority , Karachi 2010 for the NIT mentioned above.

S #	Name of the Official	Status
01.	Prof: Dr. Asif Ali Memon	Convener
02.	Dr. Zulifikar Ali Umerani (External) MUET , Jamshoro	Member
03.	Mr. Fazal Ali Shaikh / Nominee	Member Secretary

Director Finance 5/7/17.

C.C to:

01. PS to Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
02. PA to Registrar, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
03. Director, I.T.S, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
04. Convener Prospectus Committee, Quaid-e-Awam University of Engineering, Science & Tech: NShah.

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH.

NO:QUEST/NH/DF/ Dated: 25 /02-2016.

NOTIFICATION

It is to notify that Worthy Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah is pleased to constitute Complaint Re-dressal Committee (C.R.C) comprising upon following officials as under for a period of one year with immediate effect .

S No:	Name of the Official	Status
01.	Prof: Dr. Ali Bux Soomro Prof: Emeritus BPS-22	Head of the Committee
02.	Prof: Dr. Bashir Ahmed Memon	Sr. Member
03.	Mr. Fazal Ali Shaikh	Secretary

5/7/17

DIRECTOR FINANCE

CC to:.

01. PS to Vice Chancellor , Quaid-e-Awam University of Engineering, Science & Technology, N'Shah.
02. PA to Registrar, Quaid-e-Awam University of Engineering, Science & Technology, N'Shah.
03. Resident Auditor Quaid-e-Awam University of Engineering, Science & Technology, N'Shah.
04. Director (A&F) Sindh Public Procurement Regularity Authority ,Karachi.

QUAID-E-AWAM UNIVESITY
OF ENGINEERING, SCIENCE & TECHNOLOGY,
NAWABSHAH.

No:QUEST/NH/DF/1038 Dated: 05-07-2017.

To,

The Director (A & F)
Sindh Public Procurement Regulatory Authority
Barrack 8 Secretariat 4A
Court Road,
Karachi. Tel: 92-21-99205356 & 99203287
Fax: 92-21-99206291

SUBJECT : **PROCUREMENT PLAN FOR FY 2017-18**

(Laboratory Equipment 2017-18)

Dear Sir,

Please find enclosed herewith the Budget Allocated for the Purchase of Laboratory Equipment for the Financial Year 2017-18 at Annexure "A" as per requirement of Sindh Public Procurement Regularity Authority's directives .

Director Finance

C.C to:

01. PS to Vice Chancellor, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
02. PA to Registrar, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
03. Director, I.T.S, Quaid-e-Awam University of Engineering, Science & Tech: NShah.
04. Convener Prospectus Committee, Quaid-e-Awam University of Engineering, Science & Tech: NShah.

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCES & TECHNOLOGY NAWABSHAH.

IV- MISCELLANCEOUS.

S.No.	HEAD OF EXPENDITURE	B.E. 2016-2017		Annual Budget 2017-2018
		Original	Revised	
1	**COMMUDITIES AND SERVICES**			
(i)	T.A & D.A for staff	6.000	6.000	5.000
(ii)	Postage	1.000	1.000	0.500
(iii)	Supply of Stationery & Printing Charges.	4.000	4.000	4.000
(iv)	Printing Charges of Prospectus & admission Forms.	15.000	15.000	14.000
(v)	Uniforms	3.500	3.500	4.000
(vi)	P.O.L Charges	25.000	25.000	24.000
(vii)	Contingencies for Departments/offices etc.	12.000	12.000	9.000
(viii)	Insurance of Buildings Equipment & Vehicles	1.000	1.000	1.000
(ix)	Publications	1.000	1.000	1.000
(x)	Group Insurance Premium	15.000	15.000	10.000
(xi)	Honorarium for Extra Hours Duty	3.000	3.000	4.000
(xii)	Remuneration to the part time teachers/staff engaged in ME Evening Program	10.000	10.000	11.000
(xiii)	Audit Fee	0.500	0.500	0.500
(xiv)	Professional Fee for Advocates/Legal fees	3.000	3.000	2.000
(xv)	Advertisement	2.000	2.000	1.500
2	**UTILITIES**			
(i)	Telephone (s)	9.000	9.000	9.000
(ii)	Electric Charges	46.500	46.500	43.000
(iii)	Gas Charges	10.000	10.000	10.000
(iv)	Water Cahrges	0.600	0.600	0.800
3	**MAINTENANCE AND REPAIR OF DURABLE GOODS.**			
(i)	Maintenance of Vehicles/ Spare Parts etc.	8.000	8.000	7.000
(ii)	Maintenance of Buildings Roads & Water Supply	12.000	12.000	7.000
(iii)	Development Works	5.000	5.000	3.000
(iv)	Maintenance of Gardens/ Lawns.	3.000	3.000	3.500
(v)	Maintenance of Furniture & Fixture	1.500	1.500	1.500
(vi)	Repair, Maintenance of Lab. equipments.	3.000	3.000	2.500
4	**PURCHASE OF DURABLE GOODS.**			
(i)	Purchase of Furniture & Fixture	4.800	4.800	4.500
(ii)	Purcahse of Vehicle	8.000	8.000	8.000
(iii)	Purchase of Laboratory Equipment for Deptt: & Offices.	13.000	13.000	8.500
5	**OTHER EXPENDITURES.**			
(i)	Entertainment	1.000	1.000	1.000
(ii)	Examination (Remuneration T.A/D.A to Examinations and Purchase of papers etc and their printings)	20.000	20.000	20.000
(iii)	Celebration of Independence day / other events.	1.000	1.000	1.000
(iv)	Security Expenditure	3.000	3.000	7.000
(V)	PMs Tution Fee Scheme for students.			
	GRAND TOTAL	**251.400**	**251.400**	**228.800**

ABE-2016-17

DIRECTOR FINANCE
Quaid-e-Awam University of Eng: Science & Technology (QUEST)
Nawabshah, Shaheed Benazir Abad

TECHANICAL EVALUTION CRITERIA
Allocated Marks 100

Passing Marks : 70

S #	DESCRIPTION	MARKS
1	Features as per specifications required / decided by the evaluation committee. (a) A category 20 Marks , (b) B category 15 Marks (c) C category 10 marks	20
2	Importers status / venture (a) 20 Consignments 10 Marks (b) 10 or not less than 05 05 Marks	10
3	Completed work with import / supply , Training , installations , Commission with certificate :- (a) 50 work 10 marks (b) 40 work 05 ©	10
4	Brand Manufacturers approved authorized Distributor (a) Int'l Distributor 10 Marks , (b) Local Distributor 05 Marks (c) Local vender 02marks .	10
5	Local Office of Distributor / Vendor (a) Karachi 5 Marks , (b) Lahore 3 Marks (c) others 02marks	05
6	Sharp Delivery Time / accomplishment of Task (overall *) (a) Timely Accomplishment 60 days from Supply order 5 Marks (b) delivery within 90 days 3 Marks	05
7	Client List of related Job (a) More than 100 clients with list 5 Marks , (b) Less than 100 but above 75 clients 3 Marks (c) <75 02marks	05
8	PEC Registered Engineers working in the organization (a) above 05 0 5 Marks , (b) < 5 but more than 2 . 0 3 Marks (c) Only 01 0 2marks	05
9	Current bank Balance of Company / Distributor / Vendor a) > 100M 10marks b) < 50 M & >2.0M 05marks	10
10	Last paid 3 month tax Return GST / Income Tax a) 100% paid return 10 marks b) 80% paid return 5 marks .	10
11	Total turnover of company / Distributor / vender per anum a) 200 M 10 Marks b) 100M 05 marks	10
	TOTAL	100