Tender Documents for:

"Energy Smart Mediterranean School Network"

ESMES

Data Acquisition Systems and Online Platform

January 2021

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Definitions

Item	Description
Approval	Written or verbal approval confirmed in writing
Applicable Law	The laws and any other instruments having the force of law in the Hashemite Kingdom of Jordan, as they may be issued and enforced from time to time.
Client (Employer / Owner)	German Jordanian University
Contract	The agreement and decision of award between the owner and the contractor and all documents included or incorporated by reference into it.
Contractor	The bidder who wins the contract (successful bidder)
Contract Price (Sum)	The value mentioned in the final agreement and the decision of award.
Decision of Award	The formal acceptance by the Client of the Tender with any additional conditions accepted before the Contract is signed by the Parties involved.
Documents	The documents defined in the Contract and which form an integral part of the Contract.
ESMES	Energy Smart Mediterranean School Network

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Government	The Government of the Hashemite Kingdom of Jordan
GJU	The German Jordanian University
Jordan	The Hashemite Kingdom of Jordan
JD	Jordanian Dinar
Operation Date (O.D.)	The date of compilation of all required hardware and software projects related tasks and installation, to successfully store and monitor all requested information from all installation sites online.
Supervising Engineer	The person/persons appointed by the Employer (client) to act as "Supervising Engineer" for the purposes of the contract and named as such in these conditions.
Time for Completion	The time specified in the Contract for the execution of the works, as defined in the Contract.
VAT	Value added Tax (Sales Tax)
Works	Any and all obligations and activities to be performed by the contractor in order to comply with the conditions of contract, including all activities of engineering, procurement, construction, testing, commissioning, operation and maintenance.

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1. Introduction

1.1. About GJU

The German-Jordanian University (GJU) is a public university founded in 2005 by a Royal Decree, in accordance with a memorandum of understanding between the Ministry of Higher Education and Scientific Research of the Hashemite Kingdom of Jordan and the Federal Ministry of Education and Research of the Federal Republic of Germany.

GJU is modelled on the German applied-sciences model, characterized by their focus on putting knowledge into practice and on promoting knowledge transfer. By taking advantage of the best educational practices in both Jordan and Germany, the University has positioned itself as a leader in its field.

GJU recognizes research and research-led teaching as primary responsibilities of its academic staff and places value on fostering, publishing, and disseminating research of the highest quality internationally.

1.2. About ESMES

"Energy Smart Mediterranean School Network" ESMES is part of the ENI CBC Med Programme, the largest multilateral initiative for cross-border cooperation (CBC) in the Mediterranean area. The Programme has a budget of €209 million, is funded by the European Union under the European Neighbourhood Instrument (ENI) and managed by the Autonomous Region of Sardinia (Italy).

ESMES will be implemented in five Mediterranean countries, involving five organizations: ICU - Institute for University Cooperation, leader of project, the German Jordanian University, the Lebanese Center for Energy Conservation, the National Agency for Energy Management of Tunisia, the Ribera Consortium of Valencia and the Alcamo Municipality in Italy.

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The project addresses the issues of growing energy demand, fossil fuel dependence and increasing CO_2 emissions in the Mediterranean area. ESMES tackles the common challenge of fostering renewable energies and reducing energy use, with the common perspective of: adapting to Mediterranean climate conditions, finding innovative, effective ways of optimizing renovation investments and reducing the effects on electricity network. Buildings have high energy consumption, causing 36% of CO_2 and high economic costs. Intervention in public schools is critical, being a relevant part of buildings stock with a low/often unknown energy performance.

ESMES will focus on the optimization of energy consumption in public schools through innovative, monitoring-based renewable energy and energy efficiency (REEE) pilot actions and will improve the capacity of public institutions in order to implement innovative energy rehabilitations.

Creation of innovative start-ups, development of Mediterranean-wide economic value chains, diversification of tourism, technological transfer, inclusion of women and NEETS in the labour market, better management of waste, water and coastal areas, and improvement of energy efficiency in public buildings: these are the main challenges addressed by the 41 projects selected for funding in the framework of the first call for standard projects, out of 439 project proposals submitted. The value of the 41 projects is €110 million, of which €100 million of EU contribution.

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1.3. Project Overview

As the project will focus on the optimization of energy consumption in public schools through innovative, **monitoring-based** renewable energy and energy efficiency (REEE) pilot actions, this tender call is related to four parts: A) Data Acquisition Systems, B) Automated Weather Station and C) Online Platform.

A) Data Acquisition Systems:

Detailed electrical data will be collected from the following schools in Jordan.

1) That al Sawari Secondary School for Girls \ Aqaba (or equivalent in same city)
2) El Mansheya Secondary School for Girls \ Kerak
3) Jrene Secondary School for Boys \ Jrene, Madaba
4) Madaba Secondary Comprehensive School for Boys \ Madaba
5) King Abdullah II School For Excellence \ Madaba
6) Mobes High School \ Mobes, Balqa
7) Al-Zarnouji Secondary Comprehensive School for Boys \ Kafr Yuba, West Irbid
8) Bayt Yafa Secondary School for Girls \ Bayt Yafa, West Irbid
9) Al-Turrah Secondary School for Boys \ Al-Turrah, Irbid

This includes all related hardware, infrastructure upgrade and software. Two types of hardware will be installed: 1) *Advanced* and 2) *Basic* as will be described in the scope of work section. All on-site equipment must be housed in appropriate locked iron clad closet or enclosure to ensure safety of users, students and equipment.

B) Automated Weather Station

An independent automated weather station shall be installed at Bayt Yafa Secondary School for Girls. The weather station must be installed in such a way that it may be easily moved to anther location if needed. The weather station must be interfaced with the *Online Platform* using the same model of the *Basic Data Acquisition* hardware. The station should be supplied with a compatible solar power system and batteries to operate for 4 consecutive cloudy days.

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C) Online Platform

Data will be collected from 50 schools in the 5 partner countries and will be automatically collected, stored, processed and published online.

2. General Terms and Conditions

2.1. It is the bidder's sole responsibility and at his own expense to understand the different sites nature, infrastructure and all requirements that are related to the tender or that may influence its pricing.

2.2. Bidders are encouraged to make site visits and get acquainted with the existing systems. The main requirement is to have systems that are compatible with the existing equipment and infrastructure.

2.3. The bidder will be fully responsible for verifying any information that may be made available to him. Under no circumstances will GJU be deemed responsible for the consequences of any such offered information.

2.4. Bidders requiring further information or clarifications may notify GJU in writing to the Central Tendering Department. GJU will respond in writing to any request for information or clarification of the bid.

2.5. To assist in the examination, evaluation and comparison of bids, GJU may ask in writing the bidder for any clarification of the bid. No change in the price or substance of the bid shall be permitted.

2.6. GJU will determine to its satisfaction whether the bidder selected as having submitted the lowest-evaluated responsive bid is qualified to satisfactorily perform the project.

2.7. GJU will award the tender to the successful bidder whose bid has been determined to be the most proper responsive bid, provided further that the bidders is determined to be qualified to satisfactorily perform the Contract.

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2.8. The bidder should submit one offer based on full Design, Installation, Operation, Training and Maintenance with spare parts. Failure to submit any of these requirements, bidder shall be disqualified.

2.9. Item *A) Data Acquisition Systems*, *B) Automated Weather Station* and *C) Online Platform* will be awarded as one lot for "design, installation, operate, train and maintain" to the most suitable technical and financial offer to GJU. Bidders' offer must include all components.

2.10. The bidder may consider the specifications in the technical specifications sections **as a guideline for the minimum requirements for designing the solution** that achieves the project goals.

2.11. The bidders must quote clustered prices for all components referred to in their submitted solution (Design) including bill of quantities (BOQ) along with description, specifications, country of origin, manufacturer of equipment, materials, tools, operation, training, and maintenance... etc.

2.12. If any item is needed during the installation that was not stated in the offer; then it is the bidder's responsibility to provide it at no additional cost. However, any omission of any part of the (BOQ) shall be deducted from the price of the offers.

2.13. All bidders must complete, sign, and stamp the compliance sheets (appendix 1).

3. Tender Format

The tender proposals submitted by the bidder shall include but not limited to the following sections:

3.1 Overview.

3.2 Detailed hardware and software description.

3.3 Comprehensive and full: design, specifications, calculations, drawings, technical details ... etc.

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3.4 Bidder qualifications.

3.5 Training.

3.6 Installation and testing plan.

3.7 Operation.

3.8 Warranty, maintenance and technical support.

3.9 Completed, signed, and stamped compliance sheets (Annex1)

3.10 Prices: All prices (itemized bill of quantities (BOQ)) shall be in euro (€), clear, itemized and exclude all customs and taxes. If any item is not priced then the offer may be considered not satisfactory, and / or considered to be zero price.

4. Tender Bonds

The bidder / bidders offer will not be considered unless it is accompanied by a tender bond not less than 3% of contract sum. This guarantee should be:

4.1 Issued by a licensed local bank, approved by the client.

4.2 Issued in the name of GJU. The guarantor will pay this amount on the first demand, if it becomes evident that information given by the Contractor contain false statements.

4.3 Valid for not less than (90) days from the opening date of the offers, and be renewable for future periods, as GJU deems necessary.

4.4 Will be returned after signing the agreement and a performance security (Bond) has been duly entered and executed.

4.5 If the successful bidder fails to provide a performance bond and sign the agreement within (14) days of being requested by the client (GJU) to do so; the full amount of tender bond shall become payable to the client as compensation for such default.

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5. Offer Submission and Evaluation Criteria

5.1 Offer Submission:

Bids shall be submitted in two copies as follows:

- Envelope 1: contains all information regarding the technical offer which will be labeled as "**The Technical Offer**" and clearly Labeled.
- Envelope 2: contains the financial offer, which will be labeled as "**The Financial Offer**" and clearly Labeled.
- The third envelope will contain the first two envelopes and labeled as: "**Tender No. __ / __ ESMES Data Acquisition Systems and Online Platform**"
- **The Technical Offer should not contain any hint to the financial offer; otherwise, the offer will be rejected.**
- **A CD containing an electronic Copy of the Technical Offer must also be submitted**

5.2 Evaluation Criteria

- To move to the financial evaluation step, the offer must pass all the requirements described in the Scope of Work (SOW).
- The financial offers of the bidders that failed technically we be returned unopened.
- Financial evaluation of offers that pass the technical evaluation will determine the winning bidder.

6. Bidder Qualifications

The following are the minimum qualifications required for any bidder. The bidder experience shall be considered in the evaluation of the technical offers. References, when applicable, should be included in the offer.

6.1. Bidders shall have enough experience and certified technical staff to perform the design, installation and support, both sufficient experience and formal

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qualifications are required, as well as bidders experience in designing of similar projects for the last (2) years; with at least one that has been executed and is operational.

6.2. Name, experience, certificates and CVs of the engineering staff that will supervise the installation and support should be included.

6.3. The bidder must nominate in the offer a qualified project manager who will lead the company project team during the implementation of the project and be the official contact person.

6.4. The bidder should demonstrate and within his technical offer a bank certificate confirming his financial capability to carry the contract and approve the cash flow required for the bank guarantees.

6.5. The bidder should demonstrate that during the last three years the aggregate annual weighted average of turnover has been at least equal to the tender price.

6.6. The bidder must be licensed to complete the work by the appropriate authorities in the Hashemite Kingdom of Jordan.

7. Training and Operation

7.1. The offer should include onsite training for GJU staff that include but not limited to the following:

7.1.1. Operation.

7.1.2. Problems and trouble shooting.

7.1.3. Software installation and administration (Software management).

7.1.4. Hardware and Software configuration and upgrade.

7.1.5. Data storage, access, custom processing and online publishing.

7.2. The training has to meet the following requirements:

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7.2.1. Offered by a certified instructor with sufficient experience.

7.2.2. Training dates will be specified by the client at a later time.

7.3. Operation

The contractor is responsible for the complete operation of the Data Acquisition Systems, Online Platform for 12 months starting at the Operation Date. This will be done at no additional charge. Operation will include but not limited to: report creation, preventative and routine maintenance, adding partner school systems to the online platform when they are ready, and anything else deemed necessary for proper system operation.

8. Maintenance Guarantee

- The contractor must provide GJU with a "Maintenance Guarantee".
- All work shall be maintained free of charge including all required spare parts for two years (24 Months) from operation date (O.D.).
- Maintenance offer should include a maintenance contract with detailed terms for technical support, response time and spare parts needed.
- Offer must include a clear procedure and contact information that GJU technical team can use in case of emergencies.
- Offer of warrantee service must be clear and the bidder must show his commitment for doing the following:
    - Response time for problem call.
    - Response time for problem solving.
    - Response time for software/configuration support.
    - Response time for (hardware/software) failure.
    - Response time for components replacements.

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9. Design Specification

The Design Specifications are detailed in the SOW. These specs are the minimum requirements, and considered to be a guideline, bidders must offer a comprehensive and full design that meet the minimum requirements.

The design must also include all equipment, components and software necessary. The Following Instructions must be followed:

9.1. Bidders must quote in their offers all auxiliary items (Equipment, infrastructure, licenses, components, etc.) that is required for the system to function as expected. If any item is needed during installation and operation and was not stated in the offer; then it is the bidder's responsibility to provide at no additional cost.

9.2. It is the bidder sole responsibility to make sure that the offered design is complete and checked for completeness.

9.3. It is the bidder sole responsibility to guarantee that all devices, software and modules are compatible with each other and compatible with the existing infra-structure at installation locations.

9.4. GJU has the right of excluding items and changing the quantities when awarding this tender, in order not to exceed the available budget without effecting the technical requirements and actual needs.

9.5. The bidders shall provide sufficient technical, hardware and software protocol details to GJU. This will be provided to ESMES partner to guarantee their systems may communicate properly with the GJU housed Online Platform.

9.6. After installation completion, and within the maintenance period, the bidder shall perform any software upgrades necessary to integrate, store and process data received from ESMES partner with the GJU housed Online Platform.

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10. Scope of Work

Design, supply, install, test, commission and operate: 10.1 *Data Acquisition Systems*, 10.2 *Automated Weather Station* and 10.3 *Online Platform.*

10.1. Data Acquisition Systems:

The general requirements that apply to both the basic and advance DAQ systems are:

- Logger shall have sufficiently sized non-volatile memory to store all critical internal data upon sudden power loss.
- Logger shall have sufficiently sized memory for programmable onboard data logging for at least 4 days of data logging at the required number of samples.
- Shall be able to log all metered parameters.
- Logger shall be able to support any logical combination of available setpoint conditions to control any internal or external functions or events.
- System temperature operation range -10 to 70 °C.
- **Communications**
    - Ethernet over Fiber Optic or copper media.
    - Communication Protocols: Modbus, TCP/IP or ION.
    - Should have the capability to communicate with the online platform for real time monitoring and to transfer logged data to the server using push to cloud technology or FTP or file synchronization or ION technology.
- **Industrial SIM Cellular VPN Router**
    - Management and maintenance via Web
    - Support VPN tunnel
    - Support Required Network protocols to operate the system.
    - Ethernet Interface
    - Number of ports: 2 x 10/100 Mbps (2 LANs or 1 LAN + 1 WAN)
    - Serial Interface (if it's required for online monitoring)

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- Number of ports 2 x RS-485 Modbus RTU.
- The contractor will provide all necessary SIM cards, internet connections, and any internet subscription at his own cost for 24 months form O.D. Must have a separate independent internet connection, using the school's network is not permitted.

- **Installation**
  - The data acquisition system and any related devices or connections must be enclosed inside an appropriate metal enclosure that will guarantee student safety and safety from any tampering or vandalism.
  - The bidder shall perform any required maintenance or modifications to the main distribution board at the schools in order to properly install and secure the data acquisition system.

10.1.1. Basic DAQ System

The Basic DAQ system will be installed at the following schools:

1) That Al Sawari Secondary School for Girls \ Aqaba (or equivalent in same city)
2) El Mansheya Secondary School for Girls \ Kerak
3) Jrene Secondary School for Boys \ Jrene, Madaba
4) King Abdullah II School for Excellence \ Madaba
5) Mobes High School \ Mobes, Balqa
6) Al-Zarnouji Secondary Comprehensive School for Boys \ Kafr Yuba, West Irbid
7) Al-Turrah Secondary School for Boys \ Al-Turrah, Irbid

The following are the minimum requirements:

- **Measurement of:** line Current; line and phase Voltage; Frequency; Power factor per phase; total and phase Apparent, Active and reactive energy; total and phase Apparent, Active and reactive power; Total current harmonic distortion; Total voltage harmonic distortion.

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- **Metering of:** Total Demand power (P, Q, S), Total Peak demand power (PM, QM, SM), Apparent power (S, S1, S2, S3), Reactive power (Q, Q1, Q2, Q3), Active power (P, P1, P2, P3), (Active, reactive, apparent energy), neutral current, current unbalance.
- **Measurement Accuracy**
    - Class 1 active energy conforming to IEC 62053-21
    - Class 1 reactive energy conforming to IEC 62053-24
    - Power +/- 1 %
    - Voltage +/- 0.5 %
    - Current +/- 0.5 %
    - Frequency +/- 0.05 %
    - Power factor +/- 0.01
- **Sampling rate:** 64 samples/cycle
- **Product certifications:** CE conforming to IEC 61010-1
- **Security capabilities:** Password protected

10.1.2. Advanced DAQ System

The Advance DAQ system will be installed at the following schools:

1) Bayt Yafa Secondary School for Girls \ Bayt Yafa, West Irbid
2) Madaba Secondary Comprehensive School for Boys \ Madaba

The following are the minimum requirements:

- Programmable Time-stamped event log.
- Setpoint alarming capability with millisecond timestamp resolution on alarm entries and support consecutive high-speed alarm conditions.
- Logger shall be able to initiate data log captures on alarm conditions.
- Programmable Clock by selecting GPS or internal clock.
- **Measurement:** line Current; line and phase Voltage; Frequency; Power factor per phase; total and phase Apparent, Active and reactive energy; total and phase

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Apparent, Active and reactive power; Total current harmonic distortion; Total voltage harmonic distortion.

- **Metering of:** Total Demand power (P, Q, S), Total Peak demand power (PM, QM, SM), Apparent power (S, S1, S2, S3), Reactive power (Q, Q1, Q2, Q3), Active power (P, P1, P2, P3), (Active, reactive, apparent energy), neutral current, current unbalance.
- **Power quality analysis:** Harmonic distortion, Voltage sag and swell detection, Waveform capture, Compliance monitoring, Dip and swell, transient, Disturbance direction detection, Programmability (logic and math functions), Setpoint learning, Up to the 40th voltage and current harmonic.
- **Measurement Accuracy**
  - Class 0.2S active energy conforming to IEC 62053-21
  - Power +/- 0.2 %
  - Voltage +/- 0.1 %
  - Current +/- 0.1 %
  - Frequency +/- 0.05 %
  - Power factor +/- 0.005
- **Product certifications:** CE conforming to IEC 61010-1
- **Sampling rate:** 512 samples/cycle
- **Waveform capture and sag/swell: 20 microseconds at 50 Hz**
  - The Meter shall be able to perform high speed sag/swell detection of voltage disturbances on a cycle-by-cycle basis, providing the duration of the disturbance, the minimum, maximum, and average value of the voltage for each phase during the disturbance. Disturbances less than one cycle in duration can be detected.
- **Transients:** sub-cycle transient detection at 512 samples/cycle and perform 20 microsecond transient captures at 50Hz.

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- **Waveform Capture:** Perform 512 samples/cycle waveform capture recording with programmable oscillography waveform recorders.
- **Security capabilities:** Password protected
- **Power Quality:** Meter shall be able to measure power quality statistically in accordance with IEC 61000-4-30 Class A Edition 2 and perform power quality evaluations, statistical indicators (flicker, dips and swells, harmonics and inter-harmonics…etc.) in accordance with the EN50160 standards.
- Statistical indicators of power quality shall be available via communications over Modbus RTU and Modbus TCP protocol.
- PQ-Capable

10.2. Automated Weather Station

The weather station should be able to take the following measurements:

- Ambient temperature:
  minimum range: -10 to 70 °C
  Accuracy: ±0.5 °C or better
  Resolution: 0.5 °C or better

- Humidity:
  minimum range: 0 to 95%
  Accuracy: ±5% or better
  Resolution: 0.5% or better

- Wind direction:
  Range: 360°
  Resolution: at least eight steps (N,NE,E,SE,S,SW,W,NW)

- Wind speed:
  minimum range: 1 to 50 m/s

- Ambient pressure:
  minimum range: 800 to 1100 millibar

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- Rainfall:
  Minimum range: 150 mm/h
  Minimum resolution: 0.25 mm
  Accuracy: ±5% or better

- Solar radiation:
  minimum range: 0 to 1250 W/m^2
  Accuracy: ±5% or better

- 1-minute measurement resolution and hourly averages should be obtained.

10.3. Online Platform:

GJU will provide the internet connection for the PC (software server) but the bidder will follow up technically and specify the requirements

10.3.1. Energy management System Software

The software will manage data from 50 remote devices using internet in different time Zones. The software should be able to interface with any devices using appropriate protocol (such as Modbus), and have the capabilities to import data from the said devices, from .csv files, and support cloud data importing (PUSH, PULL, GET). The software monitors the facility electrical network, tracks real-time power conditions, analyzes power quality, tracks energy consumption and provides customized visualization tools like trend charts, dashboards, system historical trends, alarms, events and reports. The software should also be able to display weather data obtained through several data acquisition systems automatically or entered manually through the software interface. The software should have the capability to monitor unlimited devices.

- **Real-time monitoring**
  - View the values and trend of the electrical network facility from any workstation.
  - Compare multiple devices in real-time in trend display.
- **Trend analysis**

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- Display historical data.
- Trend any parameter
- View any combination of measured parameters.
- Compare multiple time-ranges.

- **Reporting System**
  - Customized reports.
  - Reports can be scheduled automatically or generated manually.
  - Reports can be saved as Excel, pdf and CSV, printed directly or send via email.
- **Power quality analysis**
  - Monitoring and data capture for power quality and reliability conditions.
  - Power quality events automatically detected by Advanced metering devices and uploaded to the system automatically.
  - Display harmonic histograms, odd/even harmonics, THD, K-factor
  - Waveforms duration in seconds for all measured quantities.
  - Sags, swells, short duration transients.
  - Disturbance events with associated time.
- **Alarms and events**
  - Alerts to impending problems (User Defined).
  - Alarm notification via Smart Notifications
  - Acknowledge alarms
  - Alarm filter on active or unacknowledged alarms.
- **User:** Users can access administrative and configuration functions of the software, configure devices and communication paths, edit graphical displays, edit historical reports for energy cost, consumption, and power quality.
- **Security and Access control:** Configure different access levels and role for every single device and database and screens.

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- **Web Client:**
  - Web Client Access to full software monitoring system.
  - Overview, Dashboards, Tables, Trends, Alarms, Reports.
  - Unlimited remote web client user.
- **Database and Server**
  - MySQL, SQL or Oracle, recording all relevant energy consumption data from Meters.
- **Mobile application**
  - Access to full software monitoring system.
  - Overview, Dashboards, Tables, Trends, Alarms, Reports.
  - Alarm and events are always connected and displayed in the notification center and popup notifications.

10.3.2. Online Platform Computer:

The following are the minimum requirements

- Intel® Core™ i9-10900 Processor 10th Generation, 10 cores (20MB Cache, 5.00 GHz max turbo) or equivalent.
- NVIDIA® Quadro® P1000 4GB Graphics Card or equivalent
- SSD 2TB SATA III or more hard disk, which should be able to store data for 200 advanced meters for 5 years.
- 64GB (4x16GB) 2666 DDR4 1.2v DIM
- External SSD 2TB SATA III Drive for automatic Back up, capable to store data for 200 advanced meters for 5 years.
- 2×32" Full HD LED Screens.
- 1 kWh Online UPS.
- Hardware enforced security solutions.

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- High speed network adapter (Gigabit Ethernet) that enables fiber optic if required or 5GHz to enable 500 web client users to operate the system at the same time without any problem.
- The university has campus wide Microsoft license, and therefore, the contractor should coordinate with the computer service department to install required software.

11. Method of Payment

The method of payment within this contract shall be adhere to the following terms:

- (10%) of contract price upon comprehensive design submitted by the bidder, and accepted by client.
- (45%) of equipment price as stated on (BOQ) upon installation at site (supervised and accepted by the client).
- Contract balance upon final completion of all work.

12. Contract Period and Penalties

12.1. (3) Months for designing, installation, testing and final commissioning from the commencement date until the operation date (O.D.)

12.2. There will be a penalty for every unjustified delay. There will be a delay liquidate damage (D.L.D) equal to (500) euro/day for every unjustified delay. The maximum period of delay for this contract will not be more than 1 month, after that GJU has the right to take any action in accordance with the conditions of this contract.

12.3. (12) Months for operation and training from (O.D.).

12.4. (24) Months of warranty with spare parts from the (O.D.).

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Annex 1: Compliance Sheet

Category	Subcategory	Yes or No
Bidder Qualifications	Experience in designing of similar projects for the last (2) years	
	Name, experience, certificates and CVs of the engineering staff	
	Proposed project manager	
	Bank certificate confirming financial capability to carry the contract and approve the cash flow	
	Licensed in Jordan	
	During the last three years the aggregate annual weighted average of turnover has been at least equal to the tender price.	
General Terms	1.3 Project overview: work includes all related hardware, infrastructure upgrade and software.	
	2.2 The main requirement is to have systems that are compatible with the existing equipment and infrastructure in the schools.	
	2.8 The bidder should submit one offer based on full Design, Installation, Operation, Training and Maintenance with spare parts. Failure to submit any of these requirements, bidder shall be disqualified.	
	3. Tender format: includes Detailed hardware and software description. Comprehensive and full: design, specifications, calculations, drawings, technical details, installation and testing plan (Gantt chart).	
	9.2 It is the bidder sole responsibility to make sure that the offered design is complete and checked for completeness.	
Training and Operation	Training details for all topics that are required.	
	Offered by a qualified instructor with sufficient experience.	
	Training dates will be specified by the client at a later time during operation.	
	The contractor is responsible for the complete operation of the Data Acquisition Systems, Online Platform for 12 months starting at the Operation Date	
Maintenance Guarantee	Two years (24 Months) "Maintenance Guarantee" from operation date (O.D.) with spare parts is included with the offer.	
	Clear procedure and contact information	
	Response time detailed	

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Category	Subcategory	Yes or No
Data Logger	Logger shall have sufficiently sized non-volatile memory	
	Logger shall have sufficiently sized memory for programmable onboard data logging for at least 4 days of data logging at the required number of samples.	
	Shall be able to log all metered parameters.	
	Logger shall be able to support any logical combination of available setpoint conditions to control any internal or external function or event.	
Communications	Ethernet over Fiber Optic or copper media.	
	Appropriate Communication Protocols and have the capabilities to import data from all devices, from .csv files, and support cloud data importing (PUSH, PULL, GET)	
	Should have the capability to communicate with the online platform for real time monitoring and to transfer logged data to the server using push to cloud technology or FTP, file synchronization, ION technology	
Industrial SIM Cellular VPN Router	Management and maintenance via Web	
	Support VPN tunnel	
	Support Required Network protocols to operate the system.	
	Ethernet Interface	
	Number of ports: 2 x 10/100 Mbps (2 LANs or 1 LAN + 1 WAN); 2 x RS-485 Modbus RTU.	
	The contractor will provide all necessary SIM cards, internet connections, and any internet subscription at his own cost for 24 months form O.D. Must have a separate independent internet connection, using the school's network is not permitted.	
Installation	Enclosed inside an appropriate metal enclosure	
	Perform any required maintenance or modifications to the main distribution board at the schools	

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Category	Subcategory	Yes or No
Weather Station	Installed in such a way that it may be easily moved to another location if needed	
	Must be interfaced with the Online Platform using the same model of the Basic Data Acquisition hardware.	
	Supplied with a compatible solar power system and batteries to operate for 4 consecutive cloudy days.	
	Ambient temperature: minimum range: -10 to 70 °C Accuracy: ±0.5 °C or better Resolution: 0.5 °C or better	
	Humidity: minimum range: 0 to 95% Accuracy: ±5% or better Resolution: 0.5% or better	
	Wind direction: Range: 360° Resolution: at least eight steps (N,NE,E,SE,S,SW,W,NW)	
	Wind speed: minimum range: 1 to 50 m/s	
	Ambient pressure: minimum range: 800 to 1100 millibar	
	Rainfall: Minimum range: 150 mm/h Minimum resolution: 0.25 mm Accuracy: ±5% or better	
	Solar radiation: minimum range: 0 to 1250 W/m2 Accuracy: ±5% or better	
	1-minute measurement resolution and hourly averages should be obtained.	

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Category	Subcategory	Yes or No
Basic DAQ System	To be installed in all 7 schools	
	Measurement of: line Current; line and phase Voltage; Frequency; Power factor per phase; total and phase Apparent, Active and reactive energy; total and phase Apparent, Active and reactive power; Total current harmonic distortion; Total voltage harmonic distortion.	
	Metering of: Total Demand power (P, Q, S), Total Peak demand power (PM, QM, SM), Apparent power (S, S1, S2, S3), Reactive power (Q, Q1, Q2, Q3), Active power (P, P1, P2, P3), (Active, reactive, apparent energy), neutral current, current unbalance.	
	Measurement Accuracy: Class 1 active energy conforming to IEC 62053-21 Class 1 reactive energy conforming to IEC 62053-24 Power +/- 1 % Voltage +/- 0.5 % Current +/- 0.5 % Frequency +/- 0.05 % Power factor +/- 0.01	
	Sampling rate: 64 samples/cycle	
	Product certifications: CE conforming to IEC 61010-1	
	Security capabilities: Password protected	

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Category	Subcategory	Yes or No
Advanced DAQ System	To be installed in 2 schools	
	Programmable Time-stamped event log.	
	Setpoint alarming capability with millisecond timestamp resolution on alarm entries and support consecutive high-speed alarm conditions.	
	Logger shall be able to initiate data log captures on alarm conditions.	
	Programmable Clock by selecting GPS or internal clock.	
	Measurement of: line Current; line and phase Voltage; Frequency; Power factor per phase; total and phase Apparent, Active and reactive energy; total and phase Apparent, Active and reactive power; Total current harmonic distortion; Total voltage harmonic distortion.	
	Metering of: Total Demand power (P, Q, S), Total Peak demand power (PM, QM, SM), Apparent power (S, S1, S2, S3), Reactive power (Q, Q1, Q2, Q3), Active power (P, P1, P2, P3), (Active, reactive, apparent energy), neutral current, current unbalance.	
	Power quality analysis: Harmonic distortion, Voltage sag and swell detection, Waveform capture, Compliance monitoring, Dip and swell, transient, Disturbance direction detection, Programmability (logic and math functions), Setpoint learning, Up to the 40th voltage and current harmonic. perform power quality evaluations, statistical indicators (flicker, dips and swells, harmonics and inter-harmonics...etc.) in accordance with the EN50160 standards.	
	Measurement Accuracy: Class 0.2S active energy conforming to IEC 62053-21 Power +/- 0.2 % Voltage +/- 0.1 % Current +/- 0.1 % Frequency +/- 0.05 % Power factor +/- 0.005	
	Sampling rate: 512 samples/cycle	
	Product certifications: CE conforming to IEC 61010-1	
	Security capabilities: Password protected	
	Waveform capture and sag/swell: 20 microseconds at 50 Hz	
	The Meter shall be able to perform high speed sag/swell detection of voltage disturbances on a cycle-by-cycle basis, providing the duration of the disturbance, the minimum, maximum, and average value of the voltage for each phase during the disturbance. Disturbances less than one cycle in duration can be detected.	
	Transients: sub-cycle transient detection at 512 samples/cycle and perform 20 microsecond transient captures at 50Hz.	

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Category	Subcategory	Yes or No
Online Platform Computer	Intel® Core™ i9-10900 Processor 10th Generation, 10 cores (20MB Cache, 5.00 GHz max turbo) or equivalent.	
	NVIDIA® Quadro® P1000 4GB Graphics Card or equivalent	
	SSD 2TB SATA III or more hard disk, which should be able to store data for 200 advanced meters for 5 years.	
	64GB (4x16GB) 2666 DDR4 1.2v DIM	
	External SSD 2TB SATA III Drive for automatic Back up, capable to store data for 200 advanced meters for 5 years.	
	2×32" LED Screens.	
	1 kWh Online UPS.	
	Hardware enforced security solutions.	
	High speed network adapter (Gigabit Ethernet) that enables fiber optic if required or 5GHz to enable 500 web client users to operate the system at the same time without any problem.	
Energy Management System Software	Data will be collected from 50 schools in the 5 partner countries and will be automatically collected, stored, processed and published online.	
	The software should be able to interface with any device and have the capabilities to import data from the said devices, from .csv files, and support cloud data importing (PUSH, PULL, GET).	
	Provides customized visualization tools like trend charts, dashboards, system historical trends, alarms, events and reports.	
	The software must be able to display weather data obtained through several data acquisition systems automatically or entered manually through interface.	
	The software should have the capability to monitor unlimited devices.	
	Real-time monitoring, Trend analysis, Power quality analysis	
	Reporting System	
	Alarms and events, user with Security and Access Control	
	Web Client: Web Client Access to full software monitoring system. Overview, Dashboards, Tables, Trends, Alarms, Reports. Unlimited remote web client user.	
	Database: MySQL, SQL or Oracle, recording all relevant energy consumption data from Meters.	
	Mobile accessibility: Access to full software monitoring system. Overview, Dashboards, Tables, Trends, Alarms, Reports. Alarm and events are always connected and displayed in the notification center and popup notifications.	

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