



AO GEP 07/20

SPECIFICATIONS FOR

The acquisition of a Lifetime tester system for the QSSPC (quasi-steady-state photo-conductance) measurement

Your speakers :

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GENERAL CONDITIONS:

1. TERMS OF THE CONSULTATION :

ARTICLE 1: OBJECT AND TYPE OF THE TENDER

This consultation has as aim the acquisition of a Lifetime tester system for the QSSPC (quasi-steady-state photo-conductance) measurement with suns Voc instrument for photovoltaic applications.

ARTICLE 2: REFERENCE DOCUMENTS

2.1 LAW

The contract resulting from this tender will be subject to the Moroccan law.

Any disagreement between Green Energy Park and the Provider shall be settled amicably by cooperation between the two parties; otherwise, litigation will be submitted to the competent court in Rabat unless specific clauses figure in the selling engagement of the supplier, in which case they shall prevail.

2.2 CONTRACTUAL DOCUMENTS

The obligation of the supplier for the performance of works that are the subject of this Tender will result in the whole constituent pieces of the engagement designated as bellow:

- *The contract concluded with its annexes and amendments
- *This Document
- *The orders
- *The submission and, where necessary annexes

After its notification, the engagement will be able to be modified only by amendments or letter exchanges accepted by both contracting sides.

ARTICLE 3: DEADLINE AND PLACE OF SUBMISSION OF TENDER

Tenders must be submitted according to conditions and delays planned by these specifications to the purchasing department by September 15th, 2020 before **12 PM GMT**.

Address of submission: IRESEN

16, Rue Amir Sidi Mohamed – Souissi – Rabat, Morocco

Foreign suppliers must establish a price quotation according to the Incoterm DAP Benguerir, disaggregating the cost of transporting the equipment.

Local suppliers must be able to submit a proposal including the shipping. This latter is their responsibility to the delivery place: Benguerir.

As an institute, Green Energy Park benefits from the UNESCO exemption of customs duties. So, Moroccan companies can submit a proposal without customs duties.



ARTICLE 4: SUBMISSION FOLDER

Any tenderer is required to present a folder of submission containing:

4.1. ADMINISTRATIVE FILE:

This folder must contain:

- A declaration on honor
- Excerpt of K-BIS or the certificate of registration in the commercial register for persons subject to the obligation to register in accordance with the legislation in force
- A certificate or its certified copy of the original issued less than a year ago by the competent administration of the place of taxation certifying that the competitor is in a regular tax situation. This certificate must mention the activity under which the competitor is taxed;
- Company presentation
- The document or documents justifying the powers conferred on the person acting on behalf of the tenderer
- These specifications initialed, signed and sealed

4.2. TECHNICAL OFFER

The supplier's technical offer must comply with, or exceed, the specifications described in article 6 "Tasks and deliverables".

The technical offer must also include the references of the tenderer.

4.3. FINANCIAL OFFER

The detailed price schedule must be clearly specified.

The offer presented by each tenderer is put in a signed and sealed envelope. This folder contains three (03) envelopes:

- The first envelope: the administrative file. This envelope must be sealed and show, in addition to the information on the envelope, the mention "Administrative file".
- The second envelope: contains the technical offer. This envelope must be sealed and bear, in addition to the indications on the envelope, the words "Technical Offer".
- The third envelope: contains the tenderer's financial offer. This envelope must be sealed and bear, in addition to the information on the envelope, the words "Financial Offer".

ARTICLE 5: PROCEDURE FOR AWARDING

This consultation will be sold following the needs of Green Energy Park. The supplier will be chosen based on the equipment's quality, the respect of the formulated needs in article 6 and the financial offer;



2. SCOPE OF DELIVERY

ARTICLE 6: TASKS AND DELIVERABLES

Technical specifications

Offline Wafer Lifetime Measurement with suns VOC instrument:

Available measurements

- Lifetime
- Resistivity
- Emitter saturation current density
- Trap density
- One-sun Voc

Lifetime measurement range

- 100 ns to greater than 10 ms

Measurement (analysis) modes

- QSSPC, transient, and generalized lifetime analysis

Resistivity measurement range

- 3–600 (undoped) Ohms/sq.

Available light bias range

- 0–50 suns

Typical calibrated injection range

- 10¹³–10¹⁶ cm⁻³

Available spectrum

- White-light and IR illumination

Sensor area

- 40-mm diameter

Sample size, standard configuration

- Standard diameter: 40–210 mm
- possibility to measure smaller sizes

Wafer thickness range

- 10–2000 μm (calibrated)

Ambient operating temperature

- 20°C–25°C

Power requirements

- WCT-120: 40 W
- Computer with monitor: 200 W
- Light source: 60 W

Universal mains voltage

- 100–240 VAC 50/60 Hz



Must include also

- Programmable flashlamp with bandpass filter
- Windows PC with installed, configured software and monitor
- data acquisition and analysis software package

Suns-Voc Instrument included in the life time measurement instrument must be able to report:

- Implied I-V curve at open circuit: materials limit to efficiency
- Pseudo-efficiency
- Pseudo-fill-factor
- Two-diode analysis
- Shunt value

And should be compatible with a standard wafer size configuration Wafer size, standard configuration

ARTICLE 7: WARRANTY PERIOD

The equipment and all accessories are warranted on Green Energy Park facilities for **two years** starting from the end of installation, including spare parts and labor ;

Spare parts:

The system should be delivered with spare parts deemed necessary for use of at least 1 year.

ARTICLE 8: INSTALLATION AND COMMISSIONING

All the elements required for the installation of the equipment and for its commissioning must be provided by the supplier. Installation, commissioning, good performance and training must be carried out within the deadlines mentioned in Article 11 of these specifications, with the consequences mentioned in case of non-respect of deadlines.

ARTICLE 9: TRAINING

The training must be provided by the installation engineer in Green Energy Park offices in Benguerir on the supplier's charges.

ARTICLE 10: TECHNICAL DOCUMENTATION

The supplier commits to provide, upon delivery, all the necessary documentation for the use, repair and all the technical documentation of the system including the usage software in English, and if available, in French.

ARTICLE 11: TERMS AND EXECUTION CONDITIONS

The equipment must be delivered within a maximum period of 8 weeks from receipt of the purchase order. If the delivery delay is other than 8 weeks, it must be specified on the offer.



ARTICLE 12: LATE PENALTIES

In case of exceeding the execution time specified in article 11, the supplier is liable to a penalty of 1‰ of the contract amount per day of late, with a maximum cumulative flat rate of 10% of the engagement amount, beyond which are applied dispositions of article 16.

ARTICLE 13: RECEPTION – VERIFICATION

a) Verification

The verification of the equipment subject of this order will take place in Green Energy Park facilities; they will be performed under the supervision of the project leader.

No delivery even if partial is accepted if the whole equipment does not respect the order form.

b) Reception

The reception and installation of the device with all its components must be done within a period not exceeding one month (30 days).

The final acceptance will be pronounced with Green Energy Park satisfaction according to the following points:

- Installation of the main equipment and its accessories
- Verification of the conformity of the whole equipment with the purchase order
- Training of Green Energy Park team staff

ARTICLE 14: PAYMENT CONDITIONS

The payment will be made on 30 days end of month after receiving the invoice and the final acceptance receipt.

The Supplier must produce a commercial numbered invoice established in 03 copies signed, dated on letters written. It must indicate the references of the contract of the related order.

These invoices must be addressed to Green Energy Park's Accounting department, located at 16, Rue Amir Sidi Mohamed Souissi, Rabat-Morocco.

ARTICLE 15: HOLDBACK

A 10% holdback is provided upon the purchase of equipment that will be released after the warranty period.

ARTICLE 16: CONTRACT CANCELATION

Regardless of expected cases of common Law, the Contract resulting from these specifications may be terminated with plain rights by Green Energy Park, with Recipient faults, and after formal notice by registered letter within a period of 20 days in the following cases:

- ▶ Fraudulent acts relating to the nature, the quality and reliability of the equipment and services covered by these specifications
- ▶ In case of exceeding the maximum flat rate of late penalties as indicated in article 11.



ARTICLE 17: RISKS INSURANCE

The Supplier declares to be covered by a professional civil insurance against the risks that he incurs during his activity and throughout the duration of the execution of this contract. This insurance must cover all risks that encounter his staff at Green Energy Park. The Client reserves the right to request copies of the insurance policy or certificate of cover.