

Instytut Metalurgii i Inżynierii Materiałowej
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Request for quotation no. ZO/39/WOLTER/2017
11th May 2017
(applies to: complete reference PV cell with certificate)

I. PURCHASER

Institute of Metallurgy and Materials Science
Polish Academy of Sciences
ul. Reymonta 25, 30-059 Kraków
Poland
NIP: PL6750001857, REGON: 000326374

II. OBJECT OF THE CONTRACT DESCRIPTION

The object of the contract is purchase and delivery to the Purchaser **complete reference PV cell with measurement certificate (one cell mini PV module)**, according to the after-mentioned parameters.

1. Object of the contract detailed description:

Specification of reference 1 cell module

- Solar cell type:
 - 6" p-type monocrystalline solar cell
 - Al-BSF structure
 - Cell size: 156 x 156 mm
 - 3 busbars
 - Efficiency higher than 18%
- Solar cell must be precisely selected based on results of following diagnostic techniques – IV curve measurement under STC, EL imaging and EQ measurement
- Module size: 205 x 205 mm
- Module structure: front side glass / lamination foil / SC / lamination foil / back sheet foil
- Front side glass
 - Extra clear low iron glass
- Thickness: from 2,0 mm to 3,0 mm ± 0,2 mm

- Optical properties:
 - Light transmittance: 0,92 or better
 - Light Reflectance: 0,08
 - Light Direct transmittance: 0,91
 - Dimension of glass - $200,0 \pm 0,5$ mm x $200,0 \pm 0,5$ mm
 - Trapezoidal polished edge
 - Fully tempered according EN12150 (ESG)
- -Solar cells must be laminated between two lamination foils
 - Highly transparent lamination EVA foil
 - EVA foil with thickness of 0,45 mm
- EVA Properties:
 - Optical Transmission: 0,91 or better
 - UV Cut-off Wavelength: 305 nm
 - Hardness: 80 / 25 Shore A/D
 - Adhesion to Glass: 130 N/cm
 - Water Absorption: < 0.1 wt
- Solar cell connection
 - Layout: one cell in the centre connected with flat copper ribbons
 - Connection technique: stringing technique with conductive adhesives (CA)
 - Connection by copper ribbons with silver coating – 1,6 x 0,13 mm
 - Three busbars will be connected by wider flat ribbon – 5,0 x 0,30 mm
 - All ribbons in module will be masked by black tape
- Frame
- Black aluminium profile with the height of 15 mm
- Electrical outlets
- Four cable outlets on the rear side – 2 outlets for plus pole and 2 outlets for minus pole (voltage and current plugs for each pole)
- Soldered interconnection ribbons and cables will be sealed in small black plastic box filled by silicone
- Flexible 4 mm, 2 cable with silicone insulation (black and red) will be used
- Cables will be terminated by precise banana plugs
- Identification
 - Label on the rear side with ID number
 - Label from Callab
- packing and freight to Poland - Institute of Metallurgy and Materials Science
Polish Academy of Sciences, Photovoltaic Laboratory, 22 Krakowska Str. 43-340
Kozy, Poland

Specification of Measurement

Specification of measurement at producer site before calibration at Certified laboratory

- QE measurement of laminated cell in module
- Suns-Voc measurement of laminated module
- IV curve measurement of PV single cell module on flash sun simulator under STC
- EL picture of laminated cells
- Results must be summarized in Report

Specification of calibration measurement

Characterization of 1 PV Module according to IEC 60904 provided by **laboratory with ILAC MRA accredited only**

- Measurement of spectral response on cell level in the range of 300 nm to 1200 nm
- Precision measurement to determine the I/V characteristic and electrical parameters of 1 PV module under standard test condition (STC), including spectral mismatch correction based on data of spectral response measurement.
- The uncertainty of measured power must be $\pm 1,6\%$ or better
- **Report from ILAC certified Laboratory must be included**

2. In order to perform the contract, Purchaser shall provide the Contractor: *not applicable*.
3. Purchaser does not allow for partial offers.
4. Purchaser does not allow for the possibility of delegating to subcontractors all or part of the contract object.

III. ORDER DELIVERY DATE

Up to 5 weeks from the date of order submission.

IV. METHOD OF THE OFFER PREPARATION

1. The offer must **be made in the offer form**, which constitutes Appendix No. 1 to the present request for quotation.
2. The offer must be sealed by the firm stamp (only in case, when the Contractor sends the offer by traditional mail)
3. The offer must have a date of the offer preparation.

4. The offer must contain address or headquarters of Contractor, e-mail address, telephone number and Taxpayer's Identification Number (TIN)
5. The offer must stipulate total product price net and total product price gross, including delivery costs, custom duties and any additional costs
6. The offer must be signed by the Contractor (only in case, when the Contractor sends the offer by traditional mail)

The price must be given in **EURO or PLN (Polish Zloty), in numbers and in words**. If it is a difference between price in numbers and price in words, the correct value will be that given in words.

V. THE PLACE AND THE DATE OF OFFER SUBMISSION

1. The offer should be sent via email to the following address: kazimierz.drabczyk@wp.pl or it should be delivered by mail, by courier or delivered in person to the address of the Purchaser headquarters, not later than **22nd May 2017 till 12:00**.
2. The offers submitted after the deadline mentioned above will not be considered.
3. A Bidder may, before the deadline for submission of offers, make changes in own offer or withdraw its offer.
4. In the course of examination and evaluation of offers, the Purchaser may request the Bidders explanations concerning the content of submitted offers.

VI. EVALUATION OF OFFERS

The evaluation of offers will take place on **22nd May 2017**. The results will be announced on the same day, at the Purchaser headquarters.

The Purchaser will evaluate properly prepared offers (prepared in accordance with the requirements set out in point IV of this request for quotation), according to the following criteria: **BEST PRICE**.

VII. INFORMATION OF THE BEST OFFER CHOICE

The Purchaser will send every Bidder information concerning the choice of the most favorable offer (via e-mail address specified in the submitted offer).

VIII. ADDITIONAL INFORMATION

Additional information concerning the subject of the contract provides: Mr. Kazimierz Drabczyk email: kazimierz.drabczyk@wp.pl + 48 33 817 42 49.

This request for quotation is also posted on the Purchaser website: www.imim.pl.

Appendix No. 1 Inquiry form

According to the Request for quotation no. **ZO/39/WOLTER/2017** concerning purchase and delivery **complete reference PV cell with certificate** according to the specification stipulated in this request, hereby we submit the offer.

NAME AND ADDRESS OF CONTRACTOR:

COMPANY NAME TIN.....

COMPANY ADDRESS

TEL. NO. FAX NO.

COMPANY E-MAIL.....

OBJECT OF THE CONTRACT (product name, product model, product type, product catalogue no. etc.)

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We will implement the contract as a whole for the price:

Net Price:

Gross Price:

Gross Price in words:

The above mentioned price includes VAT at % videlicet PLN

Hereby, we declare that:

- a) We have read the detailed specifications of the contract and we do not raise any objections to this document, as well as we have the necessary information to prepare the offer
- b) We accept the date of delivery stipulated in the request for quotation
- c) We are entitled to participate in legal transactions
- d) We have the necessary technical and material resources for the proper performance of the contract
- e) We consider ourselves bound by this offer for a period of 14 days from the date of its submission

(place, date)

(The signature of authorized person)