

# **ANNEX II + III: TECHNICAL SPECIFICATIONS + TECHNICAL OFFER**

**Contract title:** Supply, Installation, Testing and Commissioning of 2-Units of 35Kwp Grid Interactive Rooftop Solar PV plants at Sèmè-Kraké joint border post.

**Publication reference:** EuropeAid/140-613/ID/SUP/ROC

**Column 1-2 should be completed by the Contracting Authority**  
**Column 3-4 should be completed by the tenderer**  
**Column 5 is reserved for the evaluation committee**

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient)
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The documentation supplied by the Tenderer should clearly indicate (highlight, mark) the models offered (clearly specifying make and origin of the goods) and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

- Annex II / Annex II.1:

These annexes contain the complete technical description of the PV plant, the structural calculations and all relevant drawings.

- The project has been divided into 13 major items to be strictly followed by the tenderer, which should present a point by point detailed technical description.
- The tenderer should offer a PV plant strictly complying with the Technical Description contained in Annex II.1

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Site preparation; Site and rooftop assessment and preparation for each site (as per Technical Description and drawings in Annex II.1)			
2	N.108 Roof mounted steel frame structures for PV modules support, complete with every accessory for installation - clamps, screws, nuts, bolts, connectors (as per Technical Description and drawings in Annex II.1)			

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3	<p>N. 216 PV poly crystalline modules: for the two plants 250Wp each; PV modules shall have the below listed technical characteristics:</p> <ul style="list-style-type: none"> <li>• Nominal power (minimum) 250 Wp</li> <li>• UOC (Open Circuit voltage) 37,54 V</li> <li>• Ump 30,03 V</li> <li>• ISC (Short Circuit current) 8,83 A</li> <li>• Imp 8,32 A</li> <li>• PV cells 60</li> <li>• Dimensions 1663x998x35 mm</li> <li>• Efficiency (minimum) 15,00%</li> </ul> <p>(as per Technical Description and drawings in Annex II.1)</p>			

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4	<p>N. 2 string combiner boxes: one for each plant; with –</p> <ul style="list-style-type: none"> <li>-minimum n. 07 string input each complete with fuses in=12 A,</li> <li>-surge protection device,</li> <li>-disconnecting switch and</li> <li>-10 cabling accessories</li> </ul> <p>according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			
5	<p>N. Electric cables and accessories for complete system Distribution Board's Low Voltage AC wiring of the identified loads (as per Technical Description and drawings in Annex II.1)</p>			

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6	<p>Corrugated and PVC trunk: Various sizes, for</p> <p>-AC cables from the grid to PCU and PUC/Inverter to the Load</p> <p>-DC cables from the PV field to the battery Bank and from the Bank to the PCU/Inverter</p> <p>(as per Technical Description and drawings in Annex II.1)</p>			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
7	<p><b>N. Electric cables and accessories for complete DC wiring; Solar and battery Bank cables must have the below listed minimum technical characteristics:</b></p> <ul style="list-style-type: none"> <li>- <b>Maximum continuous operating temperature: 120 °C</b></li> <li>- <b>Rated voltage (U0/U): 0,6/1 kV AC</b></li> <li>- <b>Maximum DC voltage ≥ 900 V DC</b></li> <li>- <b>EPR insulated cables</b></li> <li>- <b>UV resistant</b></li> <li>- <b>Suitable for outdoor and underground installation AC/DC low voltage cables must have the below listed minimum technical characteristics:</b></li> <li>- <b>Maximum continuous operating temperature: 90 °C</b></li> <li>- <b>Rated voltage (U0/U): 450/750 V AC</b></li> <li>- <b>EPR insulated cables</b></li> <li>- <b>Suitable for outdoor</b></li> </ul> <p>(as per Technical Description and drawings in Annex II.1)</p>			

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8	<p><b>N. 4 Low voltage AC main circuit breaker:</b> two for each plant, with residual current releaser, <i>-In=250Amp, 4 poles, Din= 10A</i></p> <p>(according to every relevant national and international standard, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			
9	<p><b>N. 4 Electrical switchboards:</b> one for each of the 4-wings,</p> <p><i>-100Amp TPN, for the identified load in each block to be connected to the back-up Solar PV plant.</i></p> <p><i>-Each Board to be connected via 100Amp Earth leakage circuit breaker and should be fully earthed</i></p> <p>(according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			

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10	<p><b>N. 2 Air conditioning systems:</b> one for each plant; complete with internal and external units.</p> <p><i>-1-Hp split unit Air conditioner/ventilator</i></p> <p><i>-Batteries and converters house air conditioning system must grant a room temperature of 25°C</i></p> <p>(according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			
11	<p><b>N. 2 Earthing system:</b> one for each plant; complete with earth rods in inspection pits,</p> <p><i>-equi-potential earth bars and 35 mm2 bare copper conductor to be laid in trenches;</i></p> <p><i>-each metallic support structure for PV modules (with 25 mm2 minimum cross section conductors) and every single electrical mass (or extraneous conductive part) must be connected to the earthing system.</i></p> <p>According to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			



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12	<p>N. 48 Batteries bank, type Oz, minimum capacity 1500Ah and maximum of 2500 Ah each @ C10, to be connected to at-most 360V DC bus complete with support metal racks and charging control device;</p> <p><i>-Batteries must grant a site autonomy of 2.0 times the average back-up time consumption estimated at 420KWh/day.</i></p> <p><i>-Batteries must grant a minimum expected lifetime of 10 years.</i></p> <p>(according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			

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13	<p><b>N.2 Set of System of PCU/PV Grid connected converter: one for each plant;</b></p> <p><i>I-DC/AC converters/Inverter, total max PV power 40KVA kept (minimum),</i></p> <p><i>II-DC/DC PV converter total max Power 36KW</i></p> <p><i>III-AC/DC grid connected converter 35KW</i></p> <p><i>-regulation type V.F.I. (Voltage Frequency Independent) to supply loads with stabilized voltage and frequency, independently from input parameters fluctuations;</i></p> <p><i>-Input/output board to control other devices and to remote alarms;</i></p> <p>(according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			
14	<p><b>Manuals and Documentation;</b> (as per description and quantity in Annex II.1)</p>			
15	<p><b>Testing and Commissioning;</b> (according to every relevant national and international standards, laws, regulations, norms, Technical Description and drawings in Annex II.1)</p>			