Section 4 - Bidding Forms

This section contains the forms to be completed by the Bidder and submitted as part of its Bid.

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# Letter of Technical Bid

-- **Note** –

*The bidder must accomplish the Letter of Technical Bid on its letterhead clearly showing the bidder’s complete name and address.*

Date:

ICB No.:

Invitation for Bid No.:

To:

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. (b) We offer to design, manufacture, test, deliver, install, pre-commission, and commission in conformity with the Bidding Document the following Plant and Services: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of . . days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. We, including any Subcontractors or Manufacturers for any part of the Contract, have or will have nationalities from eligible countries, in accordance with ITB 4.2.
5. We, including any Subcontractors or Suppliers for any part of the Contract, do not have any conflict of interest in accordance with ITB 4.3.
6. We are not participating, as a Bidder in more than one bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
7. Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by ADB, under the Employer’s country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council.
8. [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].**[[1]](#footnote-2)**
9. We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.
10. If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer’s Requirements) and our technical proposal, or as otherwise agreed with the Employer.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

# Letter of price bid

-- Note –

The bidder must accomplish the Letter of Price Bid on its letterhead clearly showing the bidder’s complete name and address.

Date:

ICB No.:

Invitation for Bid No.:

To:

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. We offer to design, manufacture, test, deliver, install, pre-commission, and commission in conformity with the Bidding Document the following Plant and Services: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The total bid price, excluding any discounts offered in item (d) below is the sum of

[*amount of foreign currency in words*], [*amount in figures*], and [*amount of local currency in words*], [*amount in figures*]

*The total bid price from the Grand Summary (Schedule No. 5) should be entered by the Bidder inside this box. Absence of the total bid price in the Letter of Price Bid may result in the rejection of the bid.*

1. The discounts offered and the methodology for their application are as follows: \_\_\_\_\_\_\_\_\_\_\_\_\_
2. Our Bid shall be valid for a period of ............. days from the date fixed for the submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
3. If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document.
4. We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: **[[2]](#footnote-3)**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Recipient | Address | Reason | Amount |
|  |  |  |  |
|  |  |  | . |

1. We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
2. We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
3. We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

# Price Schedules

## PREAMBLE

**General**

1. The Price Schedules are as follows:

Schedule No. 1: Plant and Mandatory Spare Parts Supplied from Abroad

Schedule No. 2: Plant and Mandatory Spare Parts Supplied from within the Employer’s Country

Schedule No. 3: Design Services

Schedule No. 4: Installation and Other Services

Schedule No. 5: Grand Summary

Schedule No. 6: Recommended Spare Parts

1. The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer’s Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.
2. If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.

**Pricing**

1. The units and rates in figures entered into the Price Schedules should be typewritten or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialled by the Bidder.

As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.

1. Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.

For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.

Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer’s Requirements) or elsewhere in the Bidding Document.

1. Payments will be made to the Contractor in the currency or currencies indicated under each respective item.
2. When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.

**Schedules of Rates and Prices**

## Schedule No. 1: Mandatory Spare Parts Supplied from Abroad

| **Item** | **Description** | **Country of Origin** | **Quantity** | **Unit Price*a*** | | | | **Total Price*a*** | | **Taxes and Duties** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Foreign Currency** | | **CIP** | | **Foreign Currency** | | **Local Currency** | |
| **1** | **2** | **3** | **4** | **5** | | **6** | | **7 = 4 x 6** | | **8** | |
|  | **Solar Ice making plants** |  |  |  | |  | |  | |  | |
|  | PV modules |  | 400 kWp |  | |  | |  | |  | |
|  | PV roof mounting systems including fastening equipment |  |  |  | |  | |  | |  | |
|  | PV Ground mounting structures  (The structure height shall be suitable enough to place the ice making machine under the structure where required) |  | 4 lot |  | |  | |  | |  | |
|  | PV inverters |  | ≥ 400 kW |  | |  | |  | |  | |
|  | PV inverter sheds (outdoor wall mounted), canopy for protection from sun / rain and protection fence & entry door |  | 1 lot |  | |  | |  | |  | |
|  | PV plants – other required equipment (cabling, protections, cable ducts, trays, wall mounting systems for PV inverters, etc.) |  | 1 lot |  | |  | |  | |  | |
|  | Li-ion battery storage system including housing for BESS and auxiliary equipment |  | ≥ 50 kWh with minimum nominal discharge rate 2C |  | |  | |  | |  | |
|  | Battery inverters |  | ≥ 100 kW |  | |  | |  | |  | |
|  | Containerized flake Ice making plant **15 T/day**. Flake Ice Plant. Ice plant on top and storage at bottom. Ice drop directly to storage. Refrigerant type: R404A. 400V, 3Phase, 50Hz system. Automatic rake ice storage for automatic ice levelling. Ice making from sea water. Internal components shall be made from rust free material similar to SS304. Storage room capacity **35 T** |  | 3 lots |  | |  | |  | |  | |
|  | Containerized flake Ice making plant **5 T/day**. Flake Ice Plant. Ice plant on top and storage at bottom. Ice drop directly to storage. Refrigerant type: R404A. 400V, 3Phase, 50Hz system. Automatic rake ice storage for automatic ice levelling. Ice making from sea water. Internal components shall be made from rust free material similar to SS304. Storage room capacity **15 T** |  | 1 lots |  | |  | |  | |  | |
|  | Ice making plant auxiliary equipment: Any auxiliary system (hardware and software) such us sea water extraction pumps, tubes, etc. with accessories, consumables necessary for installation and start-up. Maintenance kit. Any other absolutely essential accessories for the proper functioning / Operation of the equipment which is not mentioned above |  | 4 lots |  | |  | |  | |  | |
|  | Solar powered plant control systems (including control of auxiliary battery when necessary), workstations, and related accessories |  | 4 sets |  | |  | |  | |  | |
|  | Hybrid plant control systems, workstations, and related accessories (1set for **Buruni**): The installed PV and BESS and ice making plant under this tender will be controlled by the Hybrid plant control system. |  | 1 set |  | |  | |  | |  | |
|  | Fibre Optic Cable |  | To be defined by Bidder |  | |  | |  | |  | |
|  | Meteorological stations (Type 1) |  | 0 |  | |  | |  | |  | |
|  | Meteorological stations (Type 2) |  | 0 |  | |  | |  | |  | |
| **TOTAL A.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
|  | **Mandatory spare parts – solar powered ice making plants** |  |  |  | |  | |  | |  | |
|  | PV modules |  | ≥1% of installed modules |  | |  | |  | |  | |
|  | PV inverters |  | ≥5%, minimum 1 inverter of each type |  | |  | |  | |  | |
|  | PV module mounting  assemblies |  | 1% of installed quantity |  | |  | |  | |  | |
|  | PV module cable connectors |  | 0.5% |  | |  | |  | |  | |
|  | PV communication boxes |  | 0.5% |  | |  | |  | |  | |
|  | DC string fuses |  | 0.5% |  | |  | |  | |  | |
|  | Spare parts for battery storage system: temp/humidity sensors, ventilator fans etc |  | ≥5%, minimum 1 element of each type |  | |  | |  | |  | |
|  | Spare parts for Ice making plant (for proper operation of 1 year, considering operation of 18hrs per day) |  | To be defined by the bidder applying good engineering practices |  | |  | |  | |  | |
|  | UPS |  | ≥5%, minimum 1 element of each type |  | |  | |  | |  | |
|  | Other key electrical components: cables, consumables, auxiliary, transformer, terminations & connectors, protection, breakers, etc. |  | 1 lot. |  | |  | |  | |  | |
| **TOTAL B.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
|  | **Special tools** |  |  |  | |  | |  | |  | |
|  | Fibre Optic Cable Joint Kit (suitable for joining cables supplied under this project) |  | 4 |  | |  | |  | |  | |
| **TOTAL C.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
|  | **Distribution grid upgrade** |  |  |  | |  | |  | |  | |
|  | Replacement/Modification of existing any electrical protection device as a result of the connection of Solar powered ice making plant and accessories with associated works including Project requirements. |  | 1 Lot |  | |  | |  | |  | |
|  | Integration of solar powered ice making plant into existing island minigrid distribution network (junction box, LV distribution board and accessories) |  | 1 Lot |  | |  | |  | |  | |
|  | Smartmeters and auxiliary equipment of the installation of the solar powered ice plant under Maldivian regulations. |  | 1 Lot |  | |  | |  | |  | |
|  | Low Voltage multi-core, copper conductor, cross linked polyethylene (XLPE) insulated, steel wire armored (SWA), and PVC sheathed, 600/1000 Volts, power cables with associated works and accessories as per project requirement in line with the latest IEC / BS standards, or other equivalent recognized reputable international standards. | - | (see section 6) |  | |  | |  | |  | |
|  | 4cx35mm2 |  | 25m |  | |  | |  | |  | |
|  | 4cx50mm2 |  | 150m |  | |  | |  | |  | |
|  | 4cx 70mm2 |  | 75 m |  | |  | |  | |  | |
|  | 4cx 95mm2 |  | 210 m |  | |  | |  | |  | |
|  | 4c x 120 mm2 |  | 905 m |  | |  | |  | |  | |
|  | 4c x 240 mm2 |  | 25 m |  | |  | |  | |  | |
|  | Low Voltage Distribution boxes, Outdoor weatherproof GRP sealed enclosures, IP 65, according to IEC 529, and insulation class II according to IEC 232, with associated accessories as per Employer´s requirements |  | To be defined by Bidder |  | |  | |  | |  | |
|  | 500 kVA, YNd1, 11 kV / 0,4 kV step-up transformer with isolation switch |  | 1 Nos |  | |  | |  | |  | |
| 37. | 315kVA package Substation with 315kVA, Dyn11, 11kV/0.4kV Stepdown Transformer, 11kV Ring Main Unit, and LV Distribution Panel with 8 feeders |  | 1 Nos |  | |  | |  | |  | |
|  | 3Cx50sqmm, Medium Voltage multi-core, copper conductor, cross linked polyethylene (XLPE) insulated, steel wire armored (SWA), and PVC sheathed, 11kV , power cables with associated works and accessories as per project requirement in line with the latest IEC / BS standards, or other equivalent recognized reputable international standards |  | 800m |  | |  | |  | |  | |
|  | GRP Cable Protection Sheet for 11kV Cables |  | 800 m |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
| **TOTAL D.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
| **E** | **Smartmeter Infrastructure** |  |  |  | |  | |  | |  | |
|  | PLC Blocking filters (single phase 40 A). This is required to be installed at appropriate locations as required during implementation |  | 50 |  | |  | |  | |  | |
|  | PLC Blocking filters (threephase 80 A). This is required to be installed at appropriate locations as required during implementation |  | 8 |  | |  | |  | |  | |
|  | PLC Signal repeaters. This is required to be installed at appropriate locations as required during implementation |  | 10 |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
| **TOTAL E.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
| **F** | **Distribution network** |  |  |  | |  | |  | |  | |
|  | Distribution automation investment to improve LV Buruni network resilience. The contractor shall provide design including necessary devices to make it more resilient including.  1. Remote monitor power consumption of each distribution box  The single line diagrams and network information is also provided. |  | 1 lot |  | |  | |  | |  | |
|  | Distribution automation investment to improve LV Buruni network resilience. The contractor shall provide design including necessary devices to make it more resilient including.  2. Remotely Control breakers in each distribution box |  | 1 lot |  | |  | |  | |  | |
|  | Distribution automation investment to improve LV Buruni network resilience. The contractor shall provide design including necessary devices to make it more resilient including.  3. Communication system from boxes to powerhouse |  | 1 lot |  | |  | |  | |  | |
|  | Distribution automation investment to improve LV Buruni network resilience. The contractor shall provide design including necessary devices to make it more resilient including Basic custom SCADA software for distribution monitoring and control. |  | 1 lot |  | |  | |  | |  | |
| **TOTAL F.** | | | |  | |  | |  | |  | |
|  |  |  |  |  | |  | |  | |  | |
| **TOTAL Column 7 to be carried forward to Schedule No. 5: Grand Summary** | | | | | | | |  | |  | |
| Name of Bidder | | | | |  | |  | |  | |
|  | | | | |  | |  | |  | |
| Signature of Bidder | | | | |  | |  | |  | |

*a* *Specify currencies in accordance with ITB 19.1 of the BDS. Create additional columns for up to a maximum of three foreign currencies if so required.*

**Country of Origin Declaration Form**

|  |  |  |
| --- | --- | --- |
| **Item** | **Description** | **Country** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Schedule No. 2: Plant and Mandatory Spare Parts Supplied from Within the Employer´s country

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Description** | **Quantity** | **Unit Price*a*** | | **Total EXW Price*a*** | **Sales and other Taxes** |
| **Local Currency** | **EXW Price** |
| **1** | **2** | **3** | **4** | **5** | **6 = 3 x 5** | **7** |
|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |
| **TOTAL Column 6 to be carried forward to Schedule No. 5: Grand Summary** | | | | |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
| Name of Bidder | | | |  |  |  |
|  | | | |  |  |  |
| Signature of Bidder | | | |  |  |  |
|  | | | |  |  |  |

*a* *Specify currency in accordance with ITB 19.1 of the BDS.*

*b* *Column 5 Price shall include all customs duties and sales and other taxes already paid or payable on the components and raw materials used in the manufacture or assembly of the item or the customs duties and sales and other taxes already paid on previously imported items.*

## Schedule No. 3: Design Services

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Description** | **Quantity** | **Unit Price*a*** | | **Total Price*a*** | |
| **Local Currency Portion** | **Foreign Currency Portion** | **Local Currency Portion** | **Foreign Currency Portion** |
| **1** | **2** | **3** | **4** | **5** | **6 = 3 x 4** | **7 = 3 x 5** |
| **1** | Design of the complete solar powered ice making plant according to Employer’s specification requirements (4 islands). | lump sum |  |  |  |  |
| **2** | Design of the distribution grid upgrade according to Employer’s specification requirements (4 islands). | lump sum |  |  |  |  |
| **3** | Design of the resilient distribution grid upgrade according to Employer’s specification requirements (1 island -Buruni). | lump sum |  |  |  |  |
| **5** | PLC LV Network Optimization: detect and solve Filter’s noise problems in the PLC network. Improve signal quality in different areas trough the installation of repeaters and filters, Detect broken meters (hardware failure) and wrong meter parameterization. | lump sum |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **TOTAL Columns 6 and 7 to be carried forward to Schedule No. 5: Grand Summary** | | | | |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
| Name of Bidder | | | |  |  |  |
|  | | | |  |  |  |
| Signature of Bidder | | | |  |  |  |

*a* *Specify currency in accordance with ITB 19.1 of the BDS.*

## Schedule No. 4 - Installation and Other Services

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Description** | **Quantity** | **Unit Price*a*** | | | **Total Price*a*** | | | |
| **Local Currency Portion** | **Foreign Currency Portion** | | **Local Currency Portion** | | **Foreign Currency Portion** | |
| **1** | **2** | **3** | **4** | **5** | | **6 = 3 x 4** | | **7 = 3 x 5** | |
|  | **Installation** |  |  |  | |  | |  | |
|  | All types of survey, soil tests, excavation, site filling, site clearing and development (as per international standard and formation level fixation prior site visit performed by EPC contractor), other necessary tests as per Employer’s requirements described in Bidding Document | 1 lot |  |  | |  | |  | |
|  | Installation of all PV power plants | 1 lot |  |  | |  | |  | |
|  | Installation of all Battery storage system | 1 lot |  |  | |  | |  | |
|  | Installation of all solar powered Ice making system | 1 lot |  |  | |  | |  | |
|  | Commissioning of the whole hybrid systems | 1 lot |  |  | |  | |  | |
|  | Commissioning of the solar powered Ice making system | 1 lot |  |  | |  | |  | |
|  | Optimization of PLC network. Installation and commissioning PLC blocking filters and repeaters | 1 lot |  |  | |  | |  | |
|  | Installation and commissioning of grid upgrade equipment (LV distribution Board, Main LV distribution board in Power houses, Termination of Power Cables) and associated works | 1 lot |  |  | |  | |  | |
|  | Power Cable Laying (locals standard shall be followed). Rates shall include excavation, back filling, cable warning tape, galvanized steel pipes where required by local authorities. | 1 lot |  |  | |  | |  | |
|  | Laying of Fibre Optic Cables (from powerhouse to PV inverters, and from powerhouse to island council for Central SCADA connection) | 1 lot |  |  | |  | |  | |
|  | All necessary civil works including Generator foundations, Distribution box foundation, modification of concrete cable trenches in powerhouse. | 1 lot |  |  | |  | |  | |
|  | **Other services** |  |  |  | |  | |  | |
|  | O&M support services for the period of 1 year. A minimum quarterly periodic maintenance services and service reports for all installed equipment including PV, Ice making plant, BESS, PCMS. | 1 lot |  |  | |  | |  | |
|  | Overseas training program (6 participants) | 1 lot |  |  | |  | |  | |
|  | Overseas travel expenses | 1 lot |  |  | |  | |  | |
|  | Overseas training pocket Expenses (6 participants) | 1 lot |  |  | |  | |  | |
|  | Training at the site. There will be specific training for Smartmeters ICT management in Buruni | 1 lot |  |  | |  | |  | |
|  | STI. STD and HIV/AIDS alleviation program*b* | 1 lot |  |  | |  | |  | |
| **TOTAL Columns 6 and 7 to be carried forward to Schedule No. 5: Grand Summary** | | | | | |  | |  | |
| Name of Bidder | | | | |  | |  | |  | |
| Signature of Bidder | | | | |  | |  | |  | |

*a* *Specify currency in accordance with ITB 19.1 of the BDS.*

*b* *As described in SCC 22.2.7.*

Schedule No. 5: Grand Summary

|  |  |  |  |
| --- | --- | --- | --- |
| **Schedule No.** | **Title** | **Total Price *a*** | |
| **Foreign** | **Local** |
| **1a** | **Plant and Mandatory Spare Parts Supplied from Abroad *b*** |  |  |
| **1b** | **Plant and Mandatory Spare Parts Supplied from Abroad *b*** |  |  |
|  |  |  |  |
| **2** | **Plant and Mandatory Spare Parts Supplied from Within the Employer’s Country *b*** |  |  |
| **3** | **Design Services** |  |  |
| **4** | **Installation and Other Services** |  |  |
| **Grand Total to be carried forward to Letter of Price Bid** | |  |  |
|  | |  |  |
|  | |  |  |
|  | |  |  |
| Name of Bidder | |  |  |
|  | |  |  |
| Signature of Bidder | |  |  |

*a* *Specify currency in accordance with ITB 19.1 of the BDS. Create additional columns for up to a maximum of three foreign currencies if so required.*

*b Taxes and/or duties from Schedules 1 and 2 may be added to the contract price in accordance with GCC 14 (Taxes and Duties).*

## Schedule No. 6: Recommended Spare Parts

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Description** | **Quantity** | **Unit Price*a*** | | **Total Price*a*** | |
| **EXW**  **Local Parts**  **Local Currency** | **CIP**  **Imported Parts**  **Foreign Currency** | **Local Currency Portion** | **Foreign Currency Portion** |
| **1** | **2** | **3** | **4** | **5** | **6 = 3 x 4** | **7 = 3 x 5** |
| 1 | Spare Parts & consumables for the first 2 years of operation | **1 lot** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **TOTAL** | | | | |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
|  | | | |  |  |  |
| Name of Bidder | | | |  |  |  |
|  | | | |  |  |  |
| Signature of Bidder | | | |  |  |  |

*a* *Specify currency in accordance with ITB 19.1 of the BDS.*

Tables of Adjustment Data

Not applicable

# Bid Security

## Bank Guarantee

*Bank’s name, and address of issuing branch or office***[[3]](#footnote-4)**

**Beneficiary:** *Name and address of employer*

**Date:**

**Bid Security No.:**

We have been informed that . . . . . *name of the bidder. . . . .*  (hereinafter called “the Bidder”) has submitted to you its bid dated . . . . . . . . . (hereinafter called “the Bid”) for the execution of . . . . . . . . *name of contract* . . . . . . . under Invitation for Bids No. . . . . . . . . . (“the IFB”).

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we . . . . . *name of Bank. . . . .*  hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . . . . . .*amount in figures* . . . . . . . . . (. . . . . . .*amount in words* . . . . . . . )upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

1. has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letters of Technical and Price Bid; or
2. does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter “the ITB”); or
3. having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder, or (ii) 28 days after the expiration of the Bidder’s bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.**[[4]](#footnote-5)**

. . . . . . . . . . . ***.****Bank’s seal and authorized signature(s)* . . . . . . . . . .

-- Note –

*In case of a joint venture, the bid security must be in the name of all partners to the joint venture that submits the bid.*

# Bid-Securing Declaration

Not Applicable

# Technical Proposal

The technical should include the following documentation:

**Site Organization**

**Method Statement**

**Contractor’s planned Operation & Maintenance Method**

**Mobilization Schedule**

**Construction Schedule**

**Personnel**

**Equipment**

**Proposed Subcontractors for Major Items of Plant and Services**

**Manufacturer’s Authorization**

**Functional Guarantee of the Proposed Facilities**

**Operation & Maintenance Schedule**

**Data Sheets**

## Site Organization

The Bidder shall present a detailed organization chart and list of key personnel showing the intended project organization in the Contractor’s head office and at site, including involvement of subcontractors.

## Method Statement

The Bidder shall submit a program of work giving a general description of the methods which the Contractor intends to adopt for the execution of each major stage of the Works such as e.g. for the design, procurement, manufacturing, shipping time incl. custom clearance, inland transport, civil works, mechanical works, commissioning, trial run, training, and final completion.

Technical Approach and Methodology: Explain your understanding of the objectives of the assignment, approach to services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. Highlight the problems being addressed and their importance, and explain your technical approach addressing them. Also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.

The program must detail the project step by step including milestones, describing how the contractor intends to perform the Works and site supervision showing the function of their key personnel and the involvement of the subcontractors, if any, also reflecting the anticipated timing of the Contractor’s time schedule. The Bidder shall clearly show all major and important activities and number of staff involved e.g. number of teams/ personnel for foundation works and equipment intended to be deployed.

## Mobilization Schedule

## Construction Schedule

The Contractor shall provide a construction schedule where he proposes the main assignment activities, their content and duration, phasing and interrelations, milestones (including interim ADB approvals), and delivery dates for the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan.

It should include a list of the final documents, including reports, drawings, and tables to be delivered as final output.

The construction schedule shall be consistent with mobilization schedule.

The Contractor shall among other show how the realization of the work on the 4 islands will be realized, which phases will be done in parallel, etc.

## Personnel

### Form PER – 1: Proposed Personnel

Bidders should provide the details of proposed personnel and their experience record in the relevant Information Forms below for each of the candidate.

|  |  |
| --- | --- |
| 1. | **Title of position\*** |
|  | **Name** |
| **2.** | **Title of position\*** |
|  | **Name** |
| **3.** | **Title of position\*** |
|  | **Name** |
| **4.** | **Title of position\*** |
|  | **Name** |
| **etc.** | **Title of position\*** |
| **Name** |

-- Note –

*\* As listed in Section 6 (Employer’s Requirements).*

### Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Use one form for each position.

|  |  |  |
| --- | --- | --- |
| **Position** | | |
| **Personnel information** | **Name** | **Date of birth** |
|  | **Professional qualifications** | |
| **Present employment** | **Name of employer** | |
|  | **Address of employer** | |
|  | **Telephone** | **Contact (manager/personnel officer)** |
|  | **Fax** | **E-mail** |
|  | **Job title** | **Years with present employer** |

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

|  |  |  |
| --- | --- | --- |
| **From** | **To** | **Company/Project/Position/Relevant Technical and Management Experience** |
|  |  |  |
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## Equipment

### Form EQU: Equipment

The Bidder shall provide adequate information and details to demonstrate clearly that it has the capability to meet the equipment requirements indicated in Section 6 (Employer’s Requirements), using the Forms below. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

|  |  |  |
| --- | --- | --- |
| **Item of Equipment** | | |
| **Equipment Information** | **Name of manufacturer** | **Model and power rating** |
|  | **Capacity** | **Year of manufacture** |
| **Current Status** | **Current location** | |
|  | **Details of current commitments** | |
|  |  | |
| **Source** | **Indicate source of the equipment**  **o Owned o Rented o Leased o Specially manufactured** | |

Omit the following information for equipment owned by the Bidder.

|  |  |  |
| --- | --- | --- |
| **Owner** | **Name of owner** | |
|  | **Address of owner** | |
|  |  | |
|  | **Telephone** | **Contact name and title** |
|  | **Fax** | **Telex** |
| **Agreements** | **Details of rental/lease/manufacture agreements specific to the project** | |
|  |  | |
|  |  | |

## Proposed Subcontractors and/or Manufacturers for Major Items of Plant and Services

The following Subcontractors and/or Manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item.

|  |  |  |
| --- | --- | --- |
| **Major Items of Plant** | **Proposed Subcontractors or Manufacturers** | **Country of origin** |
| PV Modules |  |  |
| PV inverters |  |  |
| Li-ion batteries |  |  |
| Battery inverters |  |  |
| PV mounting systems |  |  |
| Ground Mounting Structures |  |  |
| Hybrid power plant controller and SCADA system |  |  |
| LV Cables |  |  |
| Outdoor Distribution Board Enclosure |  |  |
| Circuit Breakers |  |  |
| Solar powered I*ce making plan* |  |  |
| Solar powered I*ce making plan Controller* |  |  |

|  |  |  |
| --- | --- | --- |
| **Major Items of Services** | **Proposed Subcontractors or Manufacturers** | **Country of origin** |
| Civil works |  |  |
| PV structure and PV module installations, test and commissioning |  |  |
| Electrical works + I&C works, installations, test and commissioning |  |  |
|  |  |  |
|  |  |  |

## Manufacturer's Authorization

Date: *[insert date (as day, month and year) of bid submission]*

ICB No.: *[insert number of bidding process]*

To: *[insert complete name of employer]*

WHEREAS

We *[insert complete name of manufacturer or manufacturer’s authorized agent]*, who are official manufacturers or agent authorized by the Manufacturer of *[insert type of goods manufactured]*, having factories at [insert full address of manufacturer’s factories], do hereby authorize *[insert complete name of bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us *[insert name and/or brief description of the goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions of Contract, with respect to the goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of: *[insert complete name of bidder]*

Dated on \_\_\_\_\_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_ *[insert date of signing]*

-- Note --

*The bidder shall require the manufacturer to fill out this form in accordance with the instructions indicated. This letter of authorization should be signed by a person with the proper authority to sign documents that are binding on the manufacturer. The bidder shall include it in its bid, if so indicated in the BDS.*

Functional Guarantee of the Proposed Facilities

### Form FUNC

The Bidder shall copy on the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in EQC 1.3.4 of Section 3, Evaluation and Qualification Criteria, and on the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment.

|  |  |
| --- | --- |
| **Functional Guarantee** *[as required by the Employer in Section 3]* | **Functional Guarantee Value Offered by the Bidder** |
| 1. |  |
| 2. |  |
| 3. |  |
| … |  |

## Operation & Maintenance Schedule

## Data sheets

### Form Overview of System Main Components

To be filled by the Bidder to provide an overview of its bid. Add 1 line for each type offered.

|  | | **To be filled by Bidder** | | | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Manufacturer/Type** | **Quantity** | **Unit** | **Note** |
|  | PV Module |  |  |  |  |
|  | PV Inverter |  |  |  |  |
|  | PV mounting system (roof-top / structure) |  |  |  |  |
|  | Battery |  |  |  |  |
|  | Battery Inverter |  |  |  |  |
|  | PV String cable |  |  |  |  |
|  | Diesel Generator |  |  |  |  |
|  | Diesel generator controller |  |  |  |  |
|  | PCMS – Plant Control and Monitoring System |  |  |  |  |
|  | AC power cable |  |  |  |  |
|  | LVDB – Low Voltage Distribution Board |  |  |  |  |
|  | DB – Distribution Board |  |  |  |  |
|  | Ice making plant |  |  |  |  |
|  | PLC blocking filters |  |  |  |  |
|  | PLC repeaters |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

### Form Data Sheet PV Module

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Type |  |  |  |  |
| 1.3 | Module description/technology |  |  |  |  |
| 1.4 | Environmental conditions description |  | local conditions must be respected |  |  |
| 1.5 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.6 | Min/Max operation temperature | °C | 0°C / +80°C |  |  |
| 1.7 | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
| **2** | **Electrical data** |  |  |  |  |
| 2.1 | Maximum DC system voltage | V | 1000 |  |  |
| 2.2 | Nominal power at STC | W |  |  |  |
| 2.3 | Power tolerance ± | % |  |  |  |
| 2.4 | Temperature coefficient P | %/°C |  |  |  |
| 2.5 | Temperature coefficient V | %/°C |  |  |  |
| 2.6 | Temperature coefficient I | %/°C |  |  |  |
| 2.7 | Nominal Operating Cell Temperature (NOCT) | °C |  |  |  |
| 2.8 | Module efficiency at STC | % | ≥15% |  |  |
| 2.9 | Cable connectors (MC4, TYCO or equivalent) |  | From same manufacturer (and same manufacturer as DC cables connectors) |  |  |
| 2.10 | Voltage at Pmax (Ve) | V |  |  |  |
| 2.11 | Open circuit voltage (VOC) | V |  |  |  |
| 2.12 | Current at Pmax (IMPP) | A |  |  |  |
| 2.13 | Short circuit current (ISC) | A |  |  |  |
| 2.14 | Peak Inverse voltage capability for bypass diodes (if applicable) | V |  |  |  |
| 2.15 | Number of bypass diodes (if applicable) | No. |  |  |  |
| 2.16 | If crystalline Modules are used: Number of cells per module | No. |  |  |  |
| 2.17 | Total number of modules installed | No. |  |  |  |
| 2.18 | Total installed capacity STC | kW |  |  |  |
| **3** | **Mechanical Data** |  |  |  |  |
| 3.1 | Height / Width / Depth | mm |  |  |  |
| 3.2 | Weight | kg |  |  |  |
| 3.3 | Front cover material |  |  |  |  |
| 3.4 | Back cover material |  |  |  |  |
| 3.5 | Frame material (if applicable) |  |  |  |  |
| 3.6 | Maximum admissible Wind loads | Pa |  |  |  |
| **4** | **Quality Data** |  |  |  |  |
| 4.1 | Safety class |  | II |  |  |
| 4.2 | Required IEC 61730 certificate |  | yes |  |  |
| 4.3 | Required IEC 61215 certificate |  | yes |  |  |
| 4.4 | Required IEC 61701 certificate |  | yes |  |  |
| 4.5 | Required PID free certificate |  | yes |  |  |
| 4.6 | Product warranty | Years | Minimum 10 years |  |  |
| 4.7 | Power guarantee | %/Year | guaranteed linear degradation, 80% after 25 years |  |  |
| 4.8 | Recycling guarantee / certification |  | yes |  |  |

### Form Data Sheet Mounting Structure for Rooftop

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  | **To be filled by Bidder** | |
|  | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Type |  |  |  |  |
| 1.3 | Structure description/technology |  |  |  |  |
| 1.4 | Azimuth and Inclination |  | Fixed, parallel to roof |  |  |
| 1.5 | Material Profiles |  | Anodized Aluminium |  |  |
| 1.6 | Material Nuts, Bolts, Screws and other Fasteners |  |  |  |  |
| 1.7 | Environmental conditions description |  | local conditions must be respected |  |  |
| 1.8 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.9 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **Construction data** |  |  |  |  |
| 2.1 | Structure parallel to roof |  | yes |  |  |
| 2.2 | Minimum distance to roof | mm | 100 |  |  |
| 2.3 | Type of Fasteners |  |  |  |  |

### Form Data Sheet Mounting Structure Free Field

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  | **To be filled by Tenderer** | |
|  | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Type |  |  |  |  |
| 1.3 | Structure description/technology |  |  |  |  |
| 1.4 | Material |  |  |  |  |
| 1.5 | Type of foundation |  |  |  |  |
| 1.6 | Environmental conditions description |  | local conditions must be respected |  |  |
| 1.7 | Special conditions |  | Dust, Salt Air |  |  |
| 1.8 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **Construction data** |  |  |  |  |
| 2.1 | Module orientation (horizontal or vertical) |  |  |  |  |
| 2.2 | Number of rows per table | No. |  |  |  |
| 2.3 | Module quantity per row | No. |  |  |  |
| 2.4 | Module quantity per table | No. |  |  |  |
| 2.5 | Modules per string | No. |  |  |  |
| 2.7 | Azimuth fixed (180° = south) | ° |  |  |  |
| 2.8 | Tilt fixed | ° |  |  |  |
| 2.9 | Minimum distance between ground and the lowest edge of the module | mm |  |  |  |
| 2.10 | Maximum distance between ground and the lowest edge of the module | mm |  |  |  |
| 2.11 | Minimum row spacing | mm |  |  |  |
| 2.12 | Table height | mm |  |  |  |
| 2.13 | Table width | mm |  |  |  |
| 2.14 | Table depth | mm |  |  |  |
| 2.15 | Table weight | kg |  |  |  |
| 2.16 | Total number of installed tables | No. |  |  |  |

### Form Data Sheet AC Junction Box

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  | **To be filled by Bidder** | |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Environmental Conditions |  | local conditions must be respected |  |  |
| 1.3 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.4 | Type of box (DC or AC) |  |  |  |  |
| 1.5 | Operating Temperature Range | °C | +5 to +55°C |  |  |
| 1.6 | Relative Humidity | % | 100 |  |  |
| 1.7 | Product Warranty | Years |  |  |  |
| 1.8 | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
| **2** | **Electrical (DC/AC Junction Box)** |  |  |  |  |
| 2.1 | Number of Incomer | No. | According to inverter concept |  |  |
| 2.2 | Number of Strings per Incomer | No. | According to inverter concept |  |  |
| 2.3 | Maximum system voltage | V | According to inverter concept |  |  |
| 2.4 | Max String Current | A | According proposed module manufacturer and type |  |  |
| 2.5 | Number of Fuses | No. | Subject to number of incomers |  |  |
| 2.6 | Nominal Current String Fuse | A | According proposed module manufacturer and type |  |  |
| 2.7 | Communication Interface |  | According to monitoring system |  |  |
| 2.8 | Surge arrester |  | Compliant with voltage (DC or AC).  For DC junction box, PV specific surge arrester type 2 mandatory |  |  |
| **3** | **Electrical (DC/AC Distribution Box)** |  |  |  |  |
| 3.1 | Number of Incomer | No. | According to inverter concept |  |  |
| 3.2 | Maximum system voltage | V | According to inverter concept |  |  |
| 3.3 | Max Current | A | According to inverter concept |  |  |
| 3.4 | Number of Fuses | No. | Subject to number of incomers |  |  |
| 3.5 | Nominal Current Fuse | A | According to inverter concept |  |  |
| **4** | **Mechanical** |  |  |  |  |
| 4.1 | Enclosure Material |  | Fiberglass |  |  |
| 4.2 | Degree of Protection |  | IPW65 or equivalent |  |  |
| 4.3 | Dimension: Width / Height / Depth | mm |  |  |  |
| 4.4 | Weight | kg |  |  |  |

### Form Data Sheet PV Inverter

To be filled by the Bidder using 1 dedicated form per PV inverter type

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Type and product reference |  |  |  |  |
| 1.3 | Inverter description/technology |  |  |  |  |
| 1.4 | Environmental conditions description |  | local conditions must be respected |  |  |
| 1.5 | Min / Max operation temperature | °C | +5° / ≥ +55° |  |  |
| 1.6 | Location of installation (indoor / outdoor) |  |  |  |  |
| 1.7 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.8 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **Electrical** |  |  |  |  |
| 2.1 | Maximum DC voltage | V | 1,000 |  |  |
| 2.2 | Nominal MPP voltage range | V |  |  |  |
| 2.3 | Maximum DC current | A |  |  |  |
| 2.4 | Number of DC inputs |  |  |  |  |
| 2.5 | Protection value of each DC input | A |  |  |  |
| 2.6 | Total nominal DC power | kW |  |  |  |
| 2.7 | Nominal AC output power | kVA |  |  |  |
| 2.8 | Maximum AC current | A |  |  |  |
| 2.9 | Nominal AC current | A |  |  |  |
| 2.10 | Nominal AC voltage | V |  |  |  |
| 2.11 | AC Isolated grid frequency | Hz | 50 |  |  |
| 2.12 | Power factors |  | Minimum: 0.80 lagging, 0.80 leading |  |  |
| 2.13 | Maximum THD | % | 3 |  |  |
| 2.14 | Minimum allowed Euro ETA | % | 97 |  |  |
| 2.15 | Operation consumption | W |  |  |  |
| 2.16 | Standby consumption | W |  |  |  |
| 2.17 | Auxiliary power voltage | V |  |  |  |
| 2.18 | Protection class (EN 60529) |  | IP 21 if in closed container, outdoor IP65 |  |  |
| 2.19 | Protection class (EN 60721-3) |  |  |  |  |
| 2.20 | Height / Width / Depth | mm |  |  |  |
| 2.21 | Weight | kg |  |  |  |
| 2.22 | Total number of Inverters | No. |  |  |  |
| **3** | **Grid Connection Requirements** |  |  |  |  |
| 3.1 | Frequency measurement average | ms | 100 |  |  |
| **4** | **Interfaces** |  |  |  |  |
| 4.1 | Communication protocol |  | Modbus TCP/IP |  |  |

### Form Data Ice Making Plant

To be filled by the Bidder using 1 dedicated form per ice making plant

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Refrigerant |  | R404A or equivalent CFC free refrigerant having lower or equal boiling point |  |  |
| 1.3 | Capacity | Tons/day | > 5 / 15 |  |  |
| 1.4 | Cooling Method |  | Sea water |  |  |
| 1.5 | Ambient Temperature | ºC | Adapted to local tropical conditions |  |  |
| 1.6 | Waterinlet Temperature | ºC | Adapted to local tropical conditions |  |  |
| 1.7 | Size of ice making plant | LxWxH (mm) |  |  |  |
| 1.8 | Size of sea water feeding pipe | mm |  |  |  |
| 1.9 | Size of ice outlet | mm |  |  |  |
| 1.10 | Total operating Weight | kg |  |  |  |
| 1.11 | Water supply pressure requirement | Bar |  |  |  |
| 1.12 | Construction and design |  | Containerized and floor standing model with compact space saving design. Modular Design |  |  |
| **2** | **Electrical** |  |  |  |  |
| 2.1 | Power supply | Voltage/Phase/Frequency | 380V/3P/50Hz |  |  |
| 2.2 | Installed Power | kW |  |  |  |
| 2.3 | Total Operating Power | kW |  |  |  |
| 2.4 | Reducer operating power | kW |  |  |  |
| 2.5 | Cold water pump power | kW |  |  |  |
| 2.6 | Cooling water pump power | kW |  |  |  |
| **3** | **Compressor** |  |  |  |  |
| 3.1 | Refrigeration capacity | kW |  |  |  |
| 3.2 | Operating Power | kW |  |  |  |
| 3.3 | Compressor COP/EER | kW/kW |  |  |  |
| **4** | **Storage Room** |  |  |  |  |
| 4.1 | Type of Storage system |  | Container |  |  |
| 4.2 | Capacity of Storage | Ton | 15 T / 35 T |  |  |
| 4.3 | Material Storage |  | Stainless steel ice storage systems for food applications |  |  |
| **5** | **Others** |  |  |  |  |
| 5.1 | For ease of installing and starting up, the machine shall completely ‘plug and play’, assembled with all the required components like frame, compressor(s), condenser, switch board, piping, cabling etc |  |  |  |  |
| 5.2 | . Warranty: |  | 2 years or more |  |  |

### Form Data Sheet Battery

To be filled by the Bidder using 1 dedicated form per battery type

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Battery chemistry (active material) |  |  |  |  |
| 1.3 | Battery type (cylindrical, prismatic, etc.) |  |  |  |  |
| 1.4 | Enclosure Specifications (indoor, outdoor, IP-class) |  |  |  |  |
| 1.5 | Min / Max operation temperature | °C | +5° / +40° |  |  |
| 1.6 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.7 | Max. relative humidity | % | ≥95 |  |  |
| 1.8 | Calendar lifetime | Years | ≥20 |  |  |
| 1.9 | Cycle lifetime (Full cycles till EOL @ 80% with DOD 80%, 1C/1C at 25°C) | Nr. | ≥5000  ***Certificate signed by Manufacturer to be provided*** |  |  |
| 1.10 | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
| **2** | **Electrical** |  |  |  |  |
| 2.1 | Usable capacity @ nominal discharge C-Rate of the selected battery | kWh |  |  |  |
| 2.2 | Nominal discharge C-rate |  | Allowed range: 1 to 2C |  |  |
| 2.3 | Size of smallest unit to be changeable on site | kWh |  |  |  |
| 2.4 | Self-discharge | %/time |  |  |  |
| 2.5 | Cycle efficiency (round trip) | % | ≥95 |  |  |
| 2.6 | Maximum DC voltage | V | <1,000 |  |  |
| 2.7 | Minimum DC Voltage | V |  |  |  |
| 2.8 | Nominal DC current charge | A |  |  |  |
| 2.9 | Nominal DC current discharge | A |  |  |  |
| 2.10 | Maximum DC current charge | A |  |  |  |
| 2.11 | Maximum DC current discharge | A |  |  |  |
| 2.12 | Time limit for max. charge current (2.10) | Time |  |  |  |
| 2.13 | Time limit for max. discharge current (2.11) | Time |  |  |  |
| 2.14 | Nominal DC power charge | kW |  |  |  |
| 2.15 | Nominal DC power discharge | kW |  |  |  |
| 2.16 | Maximum DC power charge | kW |  |  |  |
| 2.17 | Maximum DC power discharge | kW |  |  |  |
| 2.18 | Cooling Technology (air, liquid, etc.) and power/energy used for cooling |  |  |  |  |
| 2.19 | Height / Width / Depth | mm |  |  |  |
| 2.20 | Weight | kg |  |  |  |
| 2.21 | Number of individual Battery Racks | No. |  |  |  |

### Form Data Sheet Battery Inverter

To be filled by the Bidder using 1 dedicated form per battery inverter type

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Inverter description/technology |  |  |  |  |
| 1.3 | Environmental conditions description |  | local conditions must be respected |  |  |
| 1.4 | Min / Max operation temperature | °C | +5° / ≥ +40° |  |  |
| 1.5 | Location of installation (indoor / outdoor) |  |  |  |  |
| 1.6 | Special conditions |  | Salt Air, high humidity |  |  |
| 1.7 | Grid building option (island operation) |  |  |  |  |
| 1.8 | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
| **2** | **Electrical** |  |  |  |  |
| 2.1 | Nominal rated power (3-Phase) | kW |  |  |  |
| 2.2 | Number of parallel units in system | Nr. |  |  |  |
| 2.3 | Maximum DC voltage | V | <1,000 |  |  |
| 2.4 | Minimum DC Voltage | V |  |  |  |
| 2.5 | Maximum current AC and DC(short circuit) | A |  |  |  |
| 2.6 | Maximum continuous discharge current | A |  |  |  |
| 2.7 | Maximum continuous charge current | A |  |  |  |
| 2.8 | Continuous discharge power | kW |  |  |  |
| 2.9 | Continuous charge power | kW |  |  |  |
| 2.10 | Overload capability | % | ≥120% for 30 seconds |  |  |
| 2.11 | Maximum efficiency | % | >94 |  |  |
| 2.12 | Cooling Technology (air, liquid, etc.) and power/energy used |  |  |  |  |
| 2.13 | Maximum AC current (short circuit) | A |  |  |  |
| 2.14 | Nominal AC current | A |  |  |  |
| 2.15 | Nominal AC voltage | V |  |  |  |
| 2.16 | AC Isolated grid frequency | Hz | 50 |  |  |
| 2.17 | Power factors (grid connected) |  | Minimum 0.80 lagging to 0.80 leading |  |  |
| 2.18 | Power factors (grid building, island operation) |  | 0-1 lagging to 0-1 leading |  |  |
| 2.19 | Maximum THD | % | 5 |  |  |
| 2.20 | Operation consumption | W |  |  |  |
| 2.21 | Standby consumption | W |  |  |  |
| 2.22 | Auxiliary power voltage | V |  |  |  |
| 2.23 | Protection class (EN 60529) |  |  |  |  |
| 2.24 | Protection class (EN 60721-3) |  |  |  |  |
| 2.25 | Height / Width / Depth | mm |  |  |  |
| 2.26 | Weight | kg |  |  |  |
| 2.27 | Filter Function |  | 1st .. 51st harmonic (50 Hz) // 1st .. 41st harmonic (60 Hz)  All harmonics can be filtered simultaneously |  |  |
| 2.28 | Additional functions |  | Dynamic reactive power compensation;  Active and reactive power balancing (negative sequence up  tp 60%, zero sequence up to 100% of rated current);  Voltage stabilization via Q(U)-control;  Flicker compensation;  Grid-forming with neutral conductor |  |  |
| **3** | **Grid Connection Requirements** |  |  |  |  |
| 3.1 | Frequency measurement average | ms | 100 |  |  |
| **4** | **Interfaces** |  |  |  |  |
| 4.1 | Communication protocol |  | Modbus, TCP-IP |  |  |

### Form Data Sheet PCMS

To be filled by the Bidder

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
|  | Manufacturer and Type |  |  |  |  |
|  | Nr. of Hybrid projects operating with this PCMS | Nb |  |  |  |
|  | Communication protocol with PV inverters |  |  |  |  |
|  | Communication protocol with Genset controllers |  |  |  |  |
|  | Communication protocol with Battery inverters and BMS |  |  |  |  |
|  | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
|  | All islands should be readily available to future upgrade/downgrade to any of the types A, B or C. |  | mandatory |  |  |

### Form Data Sheet for Meteorological station

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.1 | Name of Manufacturer |  |  |  |  |
| 1.2 | Country of Manufacturer |  |  |  |  |
| 1.3 | Address of Manufacturer |  |  |  |  |
| 1.4 | Applicable standards |  | IEC 61439 |  |  |
| 1.5 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **Composition for Type 1** |  |  |  |  |
| **2.1** | **Pyrometer** | **pcs** | **2** |  |  |
| 2.1.1 | Applicable standards |  | ISO 9060 Secondary  Standard |  |  |
| 2.1.2 | Metering range | W/m2 | 0 to 2000 |  |  |
| 2.1.3 | Overall accuracy |  | ± 2 % of metered value (daily average) |  |  |
| 2.1.4 | Spectral Range | nm | 310 to 2800 |  |  |
| **2.2** | **Air temperature sensor** | **pcs** | **1** |  |  |
| 2.2.1 | Overall accuracy | °C | ± 0.5 |  |  |
| 2.2.2 | Metering range | °C | -40 to +70 |  |  |
| 2.2.3 | Response time | s | 20s (T90) |  |  |
| **2.3** | **Module temperature sensor** | **pcs** | **2 (independent)** |  |  |
| 2.3,1 | Type |  | PT1000 or PT100 adhesive foil resistor in 4 wire measuring technology |  |  |
| 2.3,2 | Module mounting technology |  | State of the art |  |  |
| **2.4** | **Anemometer** | **pcs** | **1** |  |  |
| 2.4,1 | Mounting type |  | Mounting on the mast |  |  |
| 2.4.2 | Sensor type |  | Solid state magnetic sensor |  |  |
| 2.4.3 | Wind direction sensor |  | Wind vane and potentiometer |  |  |
| 2.4.4 | Measurement range | m/s | 1 to 70 |  |  |
| 2.4.5 | Wind direction range | ° | 0 to 360 |  |  |
| 2.4.6 | The mast height | m |  |  |  |
| **2.5** | **Data logger** | **Pcs** | **1** |  |  |
| 2.5.1 | Time synchronized |  | Yes |  |  |
| 2.5.2 | Analogue inputs resolution |  | 16 bits |  |  |
| 2.5.3 | Input voltage range |  | 10 mV to ± 10 V, full-scale |  |  |
| 2.5.4 | Memory Extension |  | SD card |  |  |
| 2.5.5 | Interface Base |  | RS 485 / RS 232 / Ethernet / Modbus(Must be compatible with SCADA system) |  |  |
| 2.5.6 | Standard protocol |  | ASCII / PROFIBUS/ Modbus |  |  |
| 2.5.7 | Linearity /Absolute Accuracy |  | ± 0.005% / 0.05% |  |  |
| 2.5.8 | Analogue inputs fault protection |  | Against: Short circuit, overvoltage, transient, and ESD |  |  |
| 2.5.9 | Data storage space |  | At least 1 GB |  |  |
| 2.5.10 | Internal memory |  | 4MB |  |  |
| 2.5.11 | Web application for Employer/Engineer |  | Keyword protected web application |  |  |
| 2.5.12 | Ambient temperature | °C | 0-55 |  |  |
| 2.5.13 | Humidity |  | Up to 100% non-condensing |  |  |
| 2.5.14 | Watch Dog Timer |  | Yes |  |  |
| **3** | **Composition for Type 2** |  |  |  |  |
| **3.1** | **Reference cell (global solar irradiation on horizontal plane)** | **pcs** | **1** |  |  |
| 3.1.1 | Technology type |  | Same technology as used in PV power plant) |  |  |
| 3.1.2 | Installation |  | Horizontal |  |  |
| **3.2** | **Air temperature sensor** | **pcs** | **1** |  |  |
| 3.2.1 | Overall accuracy | °C | ± 0.5 |  |  |
| 3.2.2 | Metering range | °C | -40 to +70 |  |  |
| 3.2.3 | Response time | s | 20s (T90) |  |  |
| **3.3** | **Module temperature sensor** | **pcs** | **2 (independent)** |  |  |
| 3.3,1 | Type |  | PT1000 or PT100 adhesive foil resistor in 4 wire measuring technology |  |  |
| 3.3,2 | Module mounting technology |  | State of the art |  |  |
| **3.4** | **Data logger** | **Pcs** | **1** |  |  |
| 3.4.1 | Time synchronized |  | Yes |  |  |
| 3.4.2 | Analogue inputs resolution |  | 16 bits |  |  |
| 3.4.3 | Input voltage range |  | 10 mV to ± 10 V, full-scale |  |  |
| 3.4.4 | Memory Extension |  | SD card |  |  |
| 3.4.5 | Interface Base |  | RS 485 / RS 232 / Ethernet / Modbus(Must be compatible with SCADA system) |  |  |
| 3.4.6 | Standard protocol |  | ASCII / PROFIBUS/ Modbus |  |  |
| 3.4.7 | Linearity /Absolute Accuracy |  | ± 0.005% / 0.05% |  |  |
| 3.4.8 | Analogue inputs fault protection |  | Against: Short circuit, overvoltage, transient, and ESD |  |  |
| 3.4.9 | Data storage space |  | At least 1 GB |  |  |
| 3.4.10 | Internal memory |  | 4MB |  |  |
| 3.4.11 | Web application for Employer/Engineer |  | Keyword protected web application |  |  |
| 3.4.12 | Ambient temperature | °C | 0-55 |  |  |
| 3.4.13 | Humidity |  | Up to 100% non-condensing |  |  |
| 3.4.14 | Watch Dog Timer |  | Yes |  |  |
| **4** | **Enclosure and Environmental conditions** |  |  |  |  |
| 4.1 | Power supply source |  | UPS |  |  |
| 4.2 | Cabinet construction |  | Standard sized steel cabinets |  |  |
| 4.3 | Cabinet protection class |  | IP31 |  |  |
| 4.4 | LAN cabling |  | Front patches |  |  |
| 4.5 | Internal and external cabling |  | Cable organisers, cable trays, suspension and termination components with strain relief |  |  |
| 4.6 | Housing space for future equipment | % | 20 |  |  |
| 4.7 | Cable access |  | Form bottom |  |  |
| 4.8 | Earthing |  | Grounding bus bar |  |  |
| 4.9 | Power socket for maintenance |  | Yes |  |  |

### Form Data Sheet for PV String Cables

To be filled by the Bidder.

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
|  | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Type |  |  |  |  |
| 1.3 | On which page/chapter of the bid can the manufacturer datasheet be found ? |  |  |  |  |
| **2** | **Standards / Specification** |  |  |  |  |
| 2.1 | Specification |  |  |  |  |
| 2.2 | Standards |  |  |  |  |
| 2.3 | Voltage Grade | V | minimum 1000 V |  |  |
| 2.4 | Cable length | m |  |  |  |
| 2.5 | Number of cores |  | 1 |  |  |
| 2.6 | Conductor |  |  |  |  |
| 2.7 | Cross Section | mm2 | min. 4 mm² |  |  |
| 2.8 | Conductor Material |  |  |  |  |
| 2.9 | Conductor Shape |  |  |  |  |
| 2.10 | Insulation Material |  |  |  |  |
| 2.11 | Type test certificates |  | PV1-F |  |  |
| **3** | **Special Characteristics** |  |  |  |  |
| 3.1 | Colour coding |  |  |  |  |
| 3.2 | Derating factors |  |  |  |  |
| 4 | Cable Gland |  |  |  |  |
| 4.1 | Cable gland / Cable connector manufacturer |  |  |  |  |
| 4.2 | Cable connector type |  |  |  |  |
| 4.3 | Standards for cable connector |  |  |  |  |

### Form Data Sheet for DC Cables

To be filled by the Bidder using 1 dedicated form per DC cable type

|  |  |  |  | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
|  | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General** |  |  |  |  |
| 1.1 | Manufacturer |  |  |  |  |
| 1.2 | Environmental conditions |  |  |  |  |
| 1.3 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **Standards / Specification** |  |  |  |  |
| 2.1 | Specification |  |  |  |  |
| 2.2 | Standards |  |  |  |  |
| 2.3 | Voltage Grade | V | minimum 1000 V |  |  |
| 2.5 | Cable length | m |  |  |  |
| 2.6 | Number of cores |  |  |  |  |
| 2.7 | Conductor |  |  |  |  |
| 2.7.1 | Cross Section | mm2 |  |  |  |
| 2.7.2 | Material |  |  |  |  |
| 2.7.3 | Shape |  |  |  |  |
| 2.8 | Insulation Material |  |  |  |  |
| 2.9 | Armour material |  |  |  |  |
| 2.10 | Outer Sheath material |  |  |  |  |
| 2.11 | Cable gland size/dimensional details |  |  |  |  |
| 2.12 | Minimum bending radius (during laying) |  |  |  |  |
| 2.13 | Type test certificates |  |  |  |  |
| 2.14 | Routine tests |  |  |  |  |
| **3** | **Special Characteristics** |  |  |  |  |
| 3.1 | Flame retardant |  | For all above ground cables |  |  |
| 3.2 | Saline protection |  | For all buried cables |  |  |
| 3.3 | Colour coding |  |  |  |  |
| 3.4 | Derating factors |  |  |  |  |

### Form Data Sheet for LVDB (Low Voltage Distribution Box)

To be filled by the Bidder

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **Sl No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.01 | Manufacturer |  |  |  |  |
| 1.01.1 | Name |  |  |  |  |
| 1.01.2 | country of assembling |  |  |  |  |
| 1.02 | Applicable standards | IEC | IEC 60439 |  |  |
| 1.03 | Type test |  |  |  |  |
| 1.03.1 | carried out |  | Yes / No |  |  |
| 1.03.2 | date |  | dd-mm-yy |  |  |
| 1.03.3 | testing laboratory |  |  |  |  |
| 1.03.3.1 | name |  |  |  |  |
| 1.03.3.2 | country |  |  |  |  |
| 1.04 | On which page/chapter of the bid can the manufacturer datasheet be found? |  |  |  |  |
| **2** | **CONSTRUCTION DATA** |  |  |  |  |
| **A.** | **Housing** |  |  |  |  |
| 2.01 | Enclosure |  |  |  |  |
| 2.01.1 | material |  | Braced rolled steel |  |  |
| 2.01.2 | grade |  | G450 |  |  |
| 2.01.3 | applicable standards |  | BS -2989/729 |  |  |
| 2.01.4 | minimum thickness | mm | 2 |  |  |
| 2.02 | Degree of protection |  | IP-55 |  |  |
| 2.03 | Ventilation |  | Yes |  |  |
| 2.03.1 | applicable standards |  | BS5420 |  |  |
| 2.04 | Door fixings to fix the door panel during maintenance |  | Yes / no |  |  |
| 2.05 | Corrosion protection details |  |  |  |  |
| 2.05.1 | outside |  | Stove enameled textured paint RAL 7032 |  |  |
| 2.05.2 | inside |  | Gloss White |  |  |
| 2.06 | Danger sign details |  |  |  |  |
| 2.06.1 | material |  | stainless steel |  |  |
| 2.06.2 | Grade |  | 1.4301 (V2A) |  |  |
| 2.06.3 | width | mm |  |  |  |
| 2.06.4 | height | mm |  |  |  |
| 2.06.5 | letters |  | sun light proof, no fading |  |  |
| 2.07 | quality of paint |  |  |  |  |
| 2.07.1 | height of letters | mm | 100 |  |  |
| 2.07.2 | colors |  | red |  |  |
| 2.07.3 | background |  |  |  |  |
| 2.07.4 | letters | mm | 100 |  |  |
| 2.07.5 | fixing bolts |  |  |  |  |
| 2.07.6 | material |  | stainless steel |  |  |
| 2.07.7 | grade |  | 1.4301 (V2A) |  |  |
| 2.07.8 | numbers | No. |  |  |  |
| 2.08 | Identification sign details |  |  |  |  |
| 2.08.1 | material |  | stainless steel |  |  |
| 2.08.2 | grade |  | 1.4301 (V2A) |  |  |
| 2.08.3 | width | mm |  |  |  |
| 2.08.4 | height | mm |  |  |  |
| 2.08.5 | letters |  |  |  |  |
| 2.08.6 | quality of paint |  | sun light proof, no fading |  |  |
| 2.08.7 | height of letters | mm | 100 |  |  |
| 2.08.8 | colors |  |  |  |  |
| 2.08.9 | background |  |  |  |  |
| 2.08.10 | letters |  | red |  |  |
| 2.09 | fixing bolts |  |  |  |  |
| 2.09.1 | material |  | stainless steel |  |  |
| 2.09.2 | grade |  | 1.4301 (V2A) |  |  |
| 2.09.3 | numbers | No. |  |  |  |
| **B.** | **Busbar** |  |  |  |  |
| 2.10 | Applicable standards |  | IEC 60865-1 |  |  |
| 2.11 | Material |  |  |  |  |
| 2.11.1 | Copper |  | Yes |  |  |
| 2.12 | Dimensions |  |  |  |  |
| 2.12.1 | height | mm |  |  |  |
| 2.12.2 | width | mm |  |  |  |
| 2.13 | Number of runs | No. |  |  |  |
| 2.14 | Minimum clearances |  |  |  |  |
| 2.14.1 | between phases | mm | 25 |  |  |
| 2.14.2 | phases to earth | mm | 20 |  |  |
| 2.15 | Phase barrier provided |  | yes/no |  |  |
| 2.16 | Busbar insulation |  | PVC or EPOXY |  |  |
| **C.** | **Neutral Bar** |  |  |  |  |
| 2.17 | Applicable standards |  | IEC-60865-1 |  |  |
| 2.18 | Material |  | copper |  |  |
| 2.19 | Dimensions |  |  |  |  |
| 2.19.1 | height | mm |  |  |  |
| 2.19.2 | width | mm |  |  |  |
| 2.20 | Minimum clearances |  |  |  |  |
| 2.22.1 | phases to neutral bus | mm | 30 |  |  |
| 2.22.2 | Barrier to phases provided |  | yes/no |  |  |
| 2.23 | Neutral bar insulation |  | PVC or EPOXY |  |  |
| **D.** | **Earthing Bar** |  |  |  |  |
| 2.24 | Applicable standards |  | 60865-1 |  |  |
| 2.25 | Material |  | copper |  |  |
| 2.26 | Dimensions |  |  |  |  |
| 2.26.1 | height | mm |  |  |  |
| 2.26.2 | width | mm |  |  |  |
| **E.** | **Support Insulators** |  |  |  |  |
| 2.27 | Manufacturer |  |  |  |  |
| 2.27.1 | name |  |  |  |  |
| 2.27.2 | country of manufacturer |  |  |  |  |
| 2.28 | Applicable standards |  | IEC |  |  |
| 2.29 | Type |  |  |  |  |
| 2.30 | Material |  |  |  |  |
| **F.** | **Generator Air Break Circuit Breaker / MCCB (Incomers & Bus Sectionaliser)** |  |  |  |  |
| 2.31 | Manufacturer |  |  |  |  |
| 2.31.1 | name |  |  |  |  |
| 2.31.2 | country of manufacturing |  |  |  |  |
| 2.32 | Applicable standards |  | IEC-60265 |  |  |
| 2.33 | No. of poles |  |  |  |  |
| 2.34 | Arc-quenching medium |  | air |  |  |
| 2.35 | Operating facilities |  |  |  |  |
| 2.35.1 | hand |  | yes |  |  |
| 2.35.2 | motor (provision) |  | yes |  |  |
| 2.35.3 | remote control (provision) |  | yes |  |  |
| 2.35.4 | counter |  | yes |  |  |
| 2.36 | Mechanical position indicator of main contact |  | yes |  |  |
| 2.37 | Operation mechanism |  |  |  |  |
| 2.37.1 | opening |  | spring |  |  |
| 2.37.2 | closing |  | spring |  |  |
| **G.** | **CT for metering** |  | **yes / no** |  |  |
| **H** | **BESS system -MCCB** |  |  |  |  |
| 2.38 | Manufacturer |  |  |  |  |
| 2.38.1 | name |  |  |  |  |
| 2.38.2 | country of manufacturing |  |  |  |  |
| 2.39 | Applicable standards |  | IEC-60265 |  |  |
| 2.40 | No. of poles |  |  |  |  |
| 2.41 | Arc-quenching medium |  | air |  |  |
| 2.42 | Operating facilities |  |  |  |  |
| 2.42.1 | hand |  | yes |  |  |
| 2.42.2 | motor (provision) |  | yes |  |  |
| 2.42.3 | remote control (provision) |  | yes |  |  |
| 2.42.4 | counter |  | yes |  |  |
| 2.43 | Mechanical position indicator of main contact |  | yes |  |  |
| 2.44 | Operation mechanism |  |  |  |  |
| 2.44.1 | opening |  | spring |  |  |
| 2.44.2 | closing |  | spring |  |  |
| **I.** | **Outgoing Feeders MCCB** |  |  |  |  |
| 2.45 | Manufacturer |  |  |  |  |
| 2.45.1 | Name |  |  |  |  |
| 2.45.2 | country of manufacturing |  |  |  |  |
| 2.46 | Type |  | molded case |  |  |
| 2.47 | Applicable standards |  | IEC-60947-2 / BS3871 |  |  |
| 2.48 | Number of poles |  |  |  |  |
| 2.49 | Protection |  |  |  |  |
| 2.49.1 | Thermal |  | yes |  |  |
| 2.49.2 | Magnetic |  | yes |  |  |
| **J.** | **Space Heater** |  |  |  |  |
| 2.50 | Manufacturer |  |  |  |  |
| 2.50.1 | name |  |  |  |  |
| 2.50.2 | country of manufacturing |  |  |  |  |
| 2.51 | Applicable standards |  | IEC |  |  |
| 2.52 | Control system |  |  |  |  |
| 2.52.1 | humidistat |  | PTC type |  |  |
| 2.52.2 | thermostat |  | PTC type |  |  |
| 2.53 | MCB for heater provided |  | yes |  |  |
| **3** | **ELECTRICAL DATA** |  |  |  |  |
| **A.** | **Common** |  |  |  |  |
| 3.01 | Rated voltage | V | 440 |  |  |
| 3.02 | Nominal operating voltage | V | 400 |  |  |
| 3.03 | Frequency | Hz | 50 |  |  |
| 3.04 | Power frequency withstand test voltage, 1s | kVrms | 2 |  |  |
| 3.04.1 | Rated short-circuit current, 1s | kA | 25 |  |  |
| 3.05 | Control supply voltage |  |  |  |  |
| 3.05.1 | trip and closing coils | V | 240 |  |  |
| 3.05.2 | spring charging motors | V | 240 |  |  |
| **B.** | **Busbars** |  |  |  |  |
| 3.06 | Bus Bar Rating | A |  |  |  |
| 3.07 | Busbar short circuit Rating | A |  |  |  |
| 3.08 | Type of Insulation for Busbar Mounting |  |  |  |  |
| **C.** | **Busbar Support Insulators** |  |  |  |  |
| 3.09 | Visible corona discharge voltage |  |  |  |  |
| 3.10 | Creepage distance | mm |  |  |  |
| **D.** | **Generator Air Break Circuit Breaker / MCCB (Incomers & Bus Sectionaliser)** |  |  |  |  |
| 3.11 | Rated current carrying capacity at max. 40°C | A |  |  |  |
| 3.12 | Operating current carrying capacity at max. 50°C |  |  |  |  |
| 3.13 | Rated symmetrical breaking current | kA |  |  |  |
| 3.14 | Rated making current | kA |  |  |  |
| 3.15 | Temperature rise of main contacts when carrying continuous current | ºC |  |  |  |
| 3.16 | Thickness of silver coating for main contact | micron |  |  |  |
| 3.17 | Number of operations circuit breaker can make without inspection replacement of contacts or other parts at 100% rated breaking current | No. | min. 20000 |  |  |
| 3.18 | Auxiliary contacts |  |  |  |  |
| 3.18.1 | number | No. |  |  |  |
| 3.18.2 | rating | A |  |  |  |
| 3.19 | Total operating time | msec |  |  |  |
| 3.19.1 | Trip free type | yes |  |  |  |
| 3.19.2 | Operating mechanism |  |  |  |  |
| 3.20 | motor rating |  |  |  |  |
| 3.21.1 | voltage | V | 240 |  |  |
| 3.21.2 | current | A |  |  |  |
| 3.21.3 | power | W |  |  |  |
| 3.22 | time for fully charging the closing spring | sec |  |  |  |
| 3.22.1 | emergency manual charging facility provided? | yes |  |  |  |
| 3.22.2 | limits of voltage for satisfactory operation of following devices, as percentage of normal Voltage |  |  |  |  |
| 3.22.3 | motor | % | 85 to 110 |  |  |
| 3.22.4 | closing coil | % | 85 to 110 |  |  |
| 3.22.5 | tripping coil | % | 70 to 110 |  |  |
| **E** | **BESS - MCCB** |  |  |  |  |
| 3.23 | Rated current carrying capacity at max. 40°C | A |  |  |  |
| 3.24 | Operating current carrying capacity at max. 50°C |  |  |  |  |
| 3.25 | Rated symmetrical breaking current | kA |  |  |  |
| 3.26 | Rated making current | kA |  |  |  |
| 3.27 | Temperature rise of main contacts when carrying continuous current | ºC |  |  |  |
| 3.28 | Thickness of silver coating for main contact | micron |  |  |  |
| 3.29 | Number of operations circuit breaker can make without inspection replacement of contacts or other parts at 100% rated breaking current | No. | min. 20000 |  |  |
| 3.30 | Auxiliary contacts |  |  |  |  |
| 3.30.1 | number | No. |  |  |  |
| 3.30.2 | rating | A |  |  |  |
| 3.31 | Total operating time | msec |  |  |  |
| 3.31.1 | Trip free type | yes |  |  |  |
| 3.31.2 | Operating mechanism |  |  |  |  |
| 3.32 | motor rating |  |  |  |  |
| 3.32.1 | voltage | V | 240 |  |  |
| 3.32.2 | current | A |  |  |  |
| 3.32.3 | power | W |  |  |  |
| 3.33 | time for fully charging the closing spring | sec |  |  |  |
| 3.33.1 | emergency manual charging facility provided? | yes |  |  |  |
| 3.33.2 | limits of voltage for satisfactory operation of following devices, as percentage of normal Voltage |  |  |  |  |
| 3.33.3 | motor | % | 85 to 110 |  |  |
| 3.33.4 | closing coil | % | 85 to 110 |  |  |
| 3.33.5 | tripping coil | % | 70 to 110 |  |  |
| **E.** | **Outgoing MCCB** |  |  |  |  |
| 3.34 | Rated current carrying at max. 40 degC |  |  |  |  |
| 3.34.1 | single-phase | A |  |  |  |
| 3.34.2 | three-phase | A |  |  |  |
| 3.35 | Operating current carrying at max. 50 degC |  |  |  |  |
| 3.35.1 | single-phase | A |  |  |  |
| 3.35.2 | three-phase | A |  |  |  |
| 3.36 | Overload and short circuit release |  | yes |  |  |
| 3.37 | Rated short-circuit current, 1s | kA |  |  |  |
| 3.38 | Rated breaking current | kA |  |  |  |
| 3.39 | Rated making current | kA |  |  |  |
| 3.40 | Rated short-circuit current, 1s | kA |  |  |  |
| 3.41 | MCCB characteristics co-ordinated with down-stream circuit protection |  | yes |  |  |
| **F.** | **Space Heater** |  |  |  |  |
| 3.42 | Power | W |  |  |  |
| 3.43 | Rated voltage | Vac | 230 |  |  |
| 3.44 | Rated current | A |  |  |  |
| 3.45 | MCCB |  |  |  |  |
| 3.45.1 | rated current | A |  |  |  |
| **G.** | **Socket** |  |  |  |  |
| 3.46 | Rated voltage | Vac | 230 |  |  |
| 3.47 | Rated current | A |  |  |  |
| 3.48 | MCCB |  |  |  |  |
| 3.48.1 | rated current | A |  |  |  |
| **H.** | **Lamp** |  |  |  |  |
| 3.49 | Power | W | 100 |  |  |
| 3.50 | Rated voltage | Vac | 230 |  |  |
| 3.51 | Rated current | A |  |  |  |
| 3.52 | Fuse |  |  |  |  |
| 3.52.1 | rated current | A |  |  |  |
| **4.** | **Generator Synchronization panel** |  |  |  |  |
| 4.1.1 | Name of Manufacturer |  |  |  |  |
| 4.1.2 | Country of Manufacturer |  |  |  |  |
| 4.1.3 | Address of Manufacturer |  |  |  |  |

### Form Data Sheet for Distribution Boxes

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.1 | Name of Manufacturer |  |  |  |  |
| 1.2 | Country of Manufacturer |  |  |  |  |
| 1.3 | Address of Manufacturer |  |  |  |  |
| 1.4 | Applicable standards |  | IEC 61439 |  |  |
| **2** | **Construction Data** |  |  |  |  |
| **2.1** | **Enclosure** |  |  |  |  |
| 2.1.1 | Material |  | Outdoor weatherproof GRP sealed |  |  |
| 2.1.2 | Thickness |  | 3mm |  |  |
| 2.1.3 | Colour |  | RAL 7032 |  |  |
| 2.2 | Dimension (Height / Width / Depth) | mm | As per project requirements |  |  |
| 2.3 | Weight | kg |  |  |  |
| 2.4 | Degree of protection | IP | 67 |  |  |
| 2.5 | Front cover material |  |  |  |  |
| 2.6 | Back cover material |  |  |  |  |
| 2.7 | Frame material (if applicable) |  |  |  |  |
| 2.8 | Locks-Material & Grade |  |  |  |  |
| 2.9 | Lifting devices |  |  |  |  |
| **3** | **Electrical data** |  |  |  |  |
| 3.1 | Rated voltage | V | 440 |  |  |
| 3.2 | Nominal operating voltage | V | 400 |  |  |
| 3.3 | Frequency | Hz | 50 |  |  |
| 3.4 | Power frequency withstand test voltage | kVrms | 2.5 |  |  |
| 3.5 | Busbar Rating | Amps | 100 |  |  |
| 3.6 | Rated Short Circuit Rating, 1s | kA | 46 |  |  |
| 3.7 | Type of Insulation on Busbars |  |  |  |  |
| 3.8 | Type of Terminal Blocks |  |  |  |  |
| 3.9 | Rating of Terminal Blocks |  |  |  |  |
| 3.10 | Earthing arrangement |  |  |  |  |
| **4.1** | **MCCB Data** |  |  |  |  |
| 4.1.1 | Name of Manufacturer |  |  |  |  |
| 4.1.2 | Country of Manufacturer |  |  |  |  |
| 4.1.3 | Address of Manufacturer |  |  |  |  |
| 4.1.4 | Applicable standards |  |  |  |  |
| **4.2** | **MCCB Construction Data** |  |  |  |  |
| 4.2.1 | Frame Size | Amps |  |  |  |
| 4.2.2 | Weight | kg |  |  |  |
| **4.3** | **MCCB Electrical Data** |  |  |  |  |
| 4.3.1 | Rated voltage | V | 440 |  |  |
| 4.3.2 | Nominal operating voltage | V | 400 |  |  |
| 4.3.3 | Rated Current | Amps |  |  |  |
| 4.3.4 | Frequency | Hz | 50 |  |  |
| 4.3.5 | Number of Poles | Nos. |  |  |  |
| 4.3.6 | Rated Insulation Voltage AC | V |  |  |  |
| 4.3.7 | Short-Circuit Interrupting Capacity Icu/Ics | kA |  |  |  |
| 4.3.8 | Rated Impulse Withstand U Imp | kV |  |  |  |
| 4.3.9 | Shunt Tripping Mode |  | Yes |  |  |
| **5** | **Supporting Documents** |  |  |  |  |
| 5.1 | All the drawings enclosed |  | Yes |  |  |
| 5.2 | All type test reports enclosed |  | Yes |  |  |
| 5.3 | Adequacy of busbar size for specified current rating |  | Yes |  |  |

### Form Data Sheet for Armored Underground Cables

To be filled by the Bidder using 1 dedicated form per LV cable type

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.1 | Name of Manufacturer |  |  |  |  |
| 1.2 | Country of Manufacturer |  |  |  |  |
| 1.3 | Address of Manufacturer |  |  |  |  |
|  |  |  |  |  |  |
| **2** | **Construction Data** |  |  |  |  |
| **2.1** | **Conductor/Neutral** |  |  |  |  |
| 2.1.1 | Applicable standards |  | IEC 60228, BS 6360 |  |  |
| 2.1.2 | Conductor Material |  | Annealed Copper wires |  |  |
| 2.1.3 | Nominal cross-section of each conductor | mm2 |  |  |  |
| 2.1.4 | Neutral Material |  | Annealed Copper wires |  |  |
| 2.1.5 | Nominal cross-section of each Neutral | mm2 |  |  |  |
| 2.1.6 | Number of Cores |  |  |  |  |
| **2.2** | **Conductor/Neutral Insulation** |  |  |  |  |
| 2.2.1 | Applicable standards |  | BS 5467, BS 7655 |  |  |
| 2.2.2 | Material |  | XLPE |  |  |
| 2.2.3 | Nominal thickness of insulation | mm |  |  |  |
| 2.2.4 | Minimum average insulation thickness | mm |  |  |  |
| 2.2.5 | Colours |  | R=Red, S=Yellow, T=Blue, N=Black |  |  |
| 2.2.6 | UV-resistant |  | Yes |  |  |
| **2.3** | **Binder/separation** |  |  |  |  |
| 2.3.1 | Material |  | Polypropylene |  |  |
| 2.3.2 | Approximate diameter | mm |  |  |  |
| **2.4** | **Inner sheath (bedding)** |  |  |  |  |
| 2.4.1 | Applicable standards |  | BS 5467 |  |  |
| 2.4.2 | Material |  | PVC-ST2 |  |  |
| 2.4.3 | Nominal thickness | mm |  |  |  |
| 2.4.4 | Colour |  |  |  |  |
| 2.4.5 | Approximate diameter | mm |  |  |  |
| **2.5** | **Armour** |  |  |  |  |
| 2.5.1 | Applicable standards |  | BS 5467, BS EN 10257-1 |  |  |
| 2.5.2 | Material |  | Galvanised steel wires |  |  |
| 2.5.3 | Number of wires | Nos. |  |  |  |
| 2.5.4 | Nominal diameter of wires | mm |  |  |  |
| 2.5.5 | Shape |  | Round |  |  |
| 2.5.6 | Cross-section of armour | mm2 |  |  |  |
| 2.5.7 | Tensile strength | N/mm2 |  |  |  |
| 2.5.8 | Min. elongation after break | % |  |  |  |
| 2.5.9 | Approximate diameter | mm |  |  |  |
| **2.6** | **Outer sheath** |  |  |  |  |
| 2.6.1 | Applicable standards |  | BS 5467, BS 7655 |  |  |
| 2.6.2 | Material |  | PVC-ST2 |  |  |
| 2.6.3 | Nominal thickness | mm |  |  |  |
| 2.6.4 | Minimum thickness | mm |  |  |  |
| 2.6.5 | Resistant to sulphide |  | Yes |  |  |
| 2.6.6 | Chloride paraffin free |  | Yes |  |  |
| 2.6.7 | Fire retardant |  | Yes |  |  |
| 2.6.8 | Length marking at every meter interval |  | Yes |  |  |
| 2.6.9 | Text embossed as specified |  | Yes |  |  |
| 2.6.10 | Colour |  | Black |  |  |
| 2.6.11 | Approx. overall diameter of cable | mm |  |  |  |
| **2.7** | **Weights** |  |  |  |  |
| 2.7.1 | Complete cable | Kg/m |  |  |  |
| 2.7.2 | Copper | Kg/m |  |  |  |
| 2.7.3 | Steel | Kg/m |  |  |  |
| **3** | **Electrical data** |  |  |  |  |
| 3.1 | Rated voltage (Uo/U) | kV | 0.6/1 |  |  |
| 3.2 | Highest system voltage (Umax) | kV | 1.2 |  |  |
| 3.3 | Frequency | Hz | 50 |  |  |
| 3.4 | Power frequency withstand voltage (4 x Uo) | kV/4hrs | 2.4 |  |  |
| **3.5** | **Maximum current carrying capacity** |  |  |  |  |
| 3.5.1 | In ground: soil temperature=40oC, depth=75cm, T.R.=1.5mK/W |  |  |  |  |
| 3.5.1.1 | 1 cable | Amp |  |  |  |
| 3.5.1.2 | 2 cables (d=30cm) | Amp |  |  |  |
| 3.5.1.3 | 3 cables (d=30cm) | Amp |  |  |  |
| **3.5.2** | **in concrete cable trench/cable room: air=50°C** |  |  |  |  |
| 3.5.2.1 | 1 cable trays/racks | Amp |  |  |  |
| 3.5.2.2 | 2 to 3 cables trays/racks | Amp |  |  |  |
| 3.5.2.3 | 4 to 5 cables trays/racks | Amp |  |  |  |
| **3.6** | **Minimum short circuit current of the conductor** |  |  |  |  |
| 3.6.1 | For 1.0 s duration | kA |  |  |  |
| 3.6.2 | For 0.5 s duration | kA |  |  |  |
| **3.7** | **Minimum short circuit current of armouring** |  |  |  |  |
| 3.7.1 | For 1.0 s duration | kA |  |  |  |
| 3.8 | Maximum permissible continuous conductor temperature | °C | 90 |  |  |
| 3.9 | Maximum permissible continuous temperature of cable surface | °C |  |  |  |
| 3.10 | Maximum permissible conductor temperature for 117% of max. transmission capacity, prevailing maximum 100 hrs/year and 500 hrs in total (emergency overload) | °C | 105 |  |  |
| 3.11 | Maximum permissible short-circuit temperature for welded/pressed conductor connections | °C | 250 |  |  |
| 3.12 | Appropriate duration | s |  |  |  |
| 3.13 | Maximum DC conductor resistance at 20°C | Ω/km |  |  |  |
| 3.14 | Maximum AC conductor resistance at 90°C and for cable arrangements as per above | Ω/km |  |  |  |
| 3.15 | Insulation resistance at 20°C | μΩ/km |  |  |  |
| 3.16 | Capacitive reactance | μF/km |  |  |  |
| 3.17 | Inductive reactance | Ω/km |  |  |  |
| 3.18 | Resistance of cable armour at 20°C | Ω/km |  |  |  |
| **4** | **Other Data** |  |  |  |  |
| **4.1** | **Minimum permissible bending radius D** |  |  |  |  |
| 4.1.1 | In ducts | m |  |  |  |
| 4.1.2 | Laid direct or in air | m |  |  |  |
| 4.1.3 | Adjacent to joints or terminals | m |  |  |  |
| 4.1.4 | Maximum permissible pulling force | kN |  |  |  |
| 4.1.5 | Maximum permissible sidewall pressure to cable at bending point | kN/m |  |  |  |
| **5** | **Supporting Documents** |  |  |  |  |
| 5.1 | All the drawings enclosed |  | Yes |  |  |
| 5.2 | All type test reports enclosed |  | Yes |  |  |
| 5.3 | Technical literature enclosed |  | Yes |  |  |

### Form Data Sheet for Medium Voltage / Low Voltage Substation

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **General data** |  |  |  |  |
| 1.1 | Name of Manufacturer |  |  |  |  |
| 1.2 | Country of Manufacturer |  |  |  |  |
| 1.3 | Address of Manufacturer |  |  |  |  |
|  |  |  |  |  |  |
| **2** | **Construction Data** |  |  |  |  |
| **2.1** | **Conductor/Neutral** |  |  |  |  |
| 2.1.1 | Applicable standards |  | IEC 60228, BS 6360 |  |  |
| 2.1.2 | Conductor Material |  | Annealed Copper wires |  |  |
| 2.1.3 | Nominal cross-section of each conductor | mm2 |  |  |  |
| 2.1.4 | Neutral Material |  | Annealed Copper wires |  |  |
| 2.1.5 | Nominal cross-section of each Neutral | mm2 |  |  |  |
| 2.1.6 | Number of Cores |  |  |  |  |
| **2.2** | **Conductor/Neutral Insulation** |  |  |  |  |
| 2.2.1 | Applicable standards |  | BS 5467, BS 7655 |  |  |
| 2.2.2 | Material |  | XLPE |  |  |
| 2.2.3 | Nominal thickness of insulation | mm |  |  |  |
| 2.2.4 | Minimum average insulation thickness | mm |  |  |  |
| 2.2.5 | Colours |  | R=Red, S=Yellow, T=Blue, N=Black |  |  |
| 2.2.6 | UV-resistant |  | Yes |  |  |
| **2.3** | **Binder/separation** |  |  |  |  |
| 2.3.1 | Material |  | Polypropylene |  |  |
| 2.3.2 | Approximate diameter | mm |  |  |  |
| **2.4** | **Inner sheath (bedding)** |  |  |  |  |
| 2.4.1 | Applicable standards |  | BS 5467 |  |  |
| 2.4.2 | Material |  | PVC-ST2 |  |  |
| 2.4.3 | Nominal thickness | mm |  |  |  |
| 2.4.4 | Colour |  |  |  |  |
| 2.4.5 | Approximate diameter | mm |  |  |  |
| **2.5** | **Armour** |  |  |  |  |
| 2.5.1 | Applicable standards |  | BS 5467, BS EN 10257-1 |  |  |
| 2.5.2 | Material |  | Galvanised steel wires |  |  |
| 2.5.3 | Number of wires | Nos. |  |  |  |
| 2.5.4 | Nominal diameter of wires | mm |  |  |  |
| 2.5.5 | Shape |  | Round |  |  |
| 2.5.6 | Cross-section of armour | mm2 |  |  |  |
| 2.5.7 | Tensile strength | N/mm2 |  |  |  |
| 2.5.8 | Min. elongation after break | % |  |  |  |
| 2.5.9 | Approximate diameter | mm |  |  |  |
| **2.6** | **Outer sheath** |  |  |  |  |
| 2.6.1 | Applicable standards |  | BS 5467, BS 7655 |  |  |
| 2.6.2 | Material |  | PVC-ST2 |  |  |
| 2.6.3 | Nominal thickness | mm |  |  |  |
| 2.6.4 | Minimum thickness | mm |  |  |  |
| 2.6.5 | Resistant to sulphide |  | Yes |  |  |
| 2.6.6 | Chloride paraffin free |  | Yes |  |  |
| 2.6.7 | Fire retardant |  | Yes |  |  |
| 2.6.8 | Length marking at every meter interval |  | Yes |  |  |
| 2.6.9 | Text embossed as specified |  | Yes |  |  |
| 2.6.10 | Colour |  | Black |  |  |
| 2.6.11 | Approx. overall diameter of cable | mm |  |  |  |
| **2.7** | **Weights** |  |  |  |  |
| 2.7.1 | Complete cable | Kg/m |  |  |  |
| 2.7.2 | Copper | Kg/m |  |  |  |
| 2.7.3 | Steel | Kg/m |  |  |  |
| **3** | **Electrical data** |  |  |  |  |
| 3.1 | Rated voltage (Uo/U) | kV | 0.6/1 |  |  |
| 3.2 | Highest system voltage (Umax) | kV | 1.2 |  |  |
| 3.3 | Frequency | Hz | 50 |  |  |
| 3.4 | Power frequency withstand voltage (4 x Uo) | kV/4hrs | 2.4 |  |  |
| **3.5** | **Maximum current carrying capacity** |  |  |  |  |
| 3.5.1 | In ground: soil temperature=40oC, depth=75cm, T.R.=1.5mK/W |  |  |  |  |
| 3.5.1.1 | 1 cable | Amp |  |  |  |
| 3.5.1.2 | 2 cables (d=30cm) | Amp |  |  |  |
| 3.5.1.3 | 3 cables (d=30cm) | Amp |  |  |  |
| **3.5.2** | **in concrete cable trench/cable room: air=50°C** |  |  |  |  |
| 3.5.2.1 | 1 cable trays/racks | Amp |  |  |  |
| 3.5.2.2 | 2 to 3 cables trays/racks | Amp |  |  |  |
| 3.5.2.3 | 4 to 5 cables trays/racks | Amp |  |  |  |
| **3.6** | **Minimum short circuit current of the conductor** |  |  |  |  |
| 3.6.1 | For 1.0 s duration | kA |  |  |  |
| 3.6.2 | For 0.5 s duration | kA |  |  |  |
| **3.7** | **Minimum short circuit current of armouring** |  |  |  |  |
| 3.7.1 | For 1.0 s duration | kA |  |  |  |
| 3.8 | Maximum permissible continuous conductor temperature | °C | 90 |  |  |
| 3.9 | Maximum permissible continuous temperature of cable surface | °C |  |  |  |
| 3.10 | Maximum permissible conductor temperature for 117% of max. transmission capacity, prevailing maximum 100 hrs/year and 500 hrs in total (emergency overload) | °C | 105 |  |  |
| 3.11 | Maximum permissible short-circuit temperature for welded/pressed conductor connections | °C | 250 |  |  |
| 3.12 | Appropriate duration | s |  |  |  |
| 3.13 | Maximum DC conductor resistance at 20°C | Ω/km |  |  |  |
| 3.14 | Maximum AC conductor resistance at 90°C and for cable arrangements as per above | Ω/km |  |  |  |
| 3.15 | Insulation resistance at 20°C | μΩ/km |  |  |  |
| 3.16 | Capacitive reactance | μF/km |  |  |  |
| 3.17 | Inductive reactance | Ω/km |  |  |  |
| 3.18 | Resistance of cable armour at 20°C | Ω/km |  |  |  |
| **4** | **Other Data** |  |  |  |  |
| **4.1** | **Minimum permissible bending radius D** |  |  |  |  |
| 4.1.1 | In ducts | m |  |  |  |
| 4.1.2 | Laid direct or in air | m |  |  |  |
| 4.1.3 | Adjacent to joints or terminals | m |  |  |  |
| 4.1.4 | Maximum permissible pulling force | kN |  |  |  |
| 4.1.5 | Maximum permissible sidewall pressure to cable at bending point | kN/m |  |  |  |
| **5** | **Supporting Documents** |  |  |  |  |
| 5.1 | All the drawings enclosed |  | Yes |  |  |
| 5.2 | All type test reports enclosed |  | Yes |  |  |
| 5.3 | Technical literature enclosed |  | Yes |  |  |

### Form Data Sheet for Smartmeter infrastructure

|  | | | | **To be filled by Bidder** | |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Description** | **Unit** | **Requirements** | **Data** | **Note** |
| **1** | **PLC Blocking Filter** |  |  |  |  |
| 1.1 | Name of Manufacturer |  |  |  |  |
| 1.2 | Attenuation |  | > 40 db |  |  |
| 1.3 | PLC signal |  | PRIME |  |  |
| 1.4 | Rated signal | V | 230/400 |  |  |
| 1.4 | Current | A |  |  |  |
|  | Others |  |  |  |  |
| **2** | **PLC Signal Repeaters** |  |  |  |  |
| 2.1 | Name of Manufacturer |  |  |  |  |
| 2.2 | Modulation |  | . |  |  |
| 2.3 | PLC signal |  | PRIME |  |  |
| 2.4 | Rated signal | V | 230/400 |  |  |

### Form List of non-compliance

To be filled by the Bidder´s for each declared non-compliance to the Employer´s requirements

| **List of non-compliance** | | | | **Bidder:** | ***[Name of Bidder]*** | |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Tender Spec Refer** | | |  |  | |
| **Section** | **Chapter** | **Page** | **Tender Specification Requirement** | | **Bidder´s Proposal** |
|  | *6* | *4* | *XX* | *XXX* | | *XXX* |
|  |  |  |  |  | |  |
|  |  |  |  |  | |  |
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# Bidder’s Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

### Form ELI - 1: Bidder’s Information Sheet

|  |  |  |
| --- | --- | --- |
| **Bidder’s Information** | | |
| **Bidder’s legal name** |  |
| **In case of Joint Venture, legal name of each partner** |  |
| **Bidder’s country of constitution** |  |
| **Bidder’s year of constitution** |  |
| **Bidder’s legal address in country of constitution** |  |
| **Bidder’s authorized representative**  (name, address, telephone numbers, fax numbers, e-mail address) |  |
| **Attached are copies of the following documents:**   * 1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2 * 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 22.2 * 3. In case of Joint Venture, letter of intent to form Joint Venture or Joint Venture agreement, in accordance with ITB 4.1 * 4. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5 | |

### Form ELI - 2: Joint Venture Information Sheet

Each member of the Joint Venture must fill out this form separately. Subcontractor must fill out this form.

|  |  |
| --- | --- |
| **Joint Venture/Subcontractor Information** | |
| **Bidder’s legal name** |  |
| **Joint Venture Partner’s or Subcontractor’s legal name** |  |
| **Joint Venture Partner’s or Subcontractor’s country of constitution** |  |
| **Joint Venture Partner’s or Subcontractor’s year of constitution** |  |
| **Joint Venture Partner’s or Subcontractor’s legal address in country of constitution** |  |
| **Joint Venture Partner’s or Subcontractor’s authorized representative information**  (name, address, telephone numbers, fax numbers, e-mail address) |  |
| **Attached are copies of the following documents:**   * 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2 * 2. Authorization to represent the firm named above, in accordance with ITB 22.2 * 3. In the case of government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5 | |

Subcontractors are those listed in Technical Proposal – Proposed Subcontractors and/or Manufacturers for Major Items of Plant and Services.

### Form LIT – 1: Pending Litigation and Arbitration

Each Bidder must fill out this form if so required under Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) to describe any pending litigation or arbitration formally commenced against it.

In case of joint ventures, each Joint Venture Partner must fill out this form separately, and provide the Joint Venture Partner name below:

Joint Venture Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Pending Litigation and Arbitration** | | | |
| **Choose one of the following:**   * No pending litigation and arbitration. * Below is a description of all pending litigation and arbitration against the Bidder (or each Joint Venture member if Bidder is a Joint Venture). | | | |
| **Year** | **Matter in Dispute** | **Value of Pending Claim in US$ Equivalent** | **Value of Pending Claim as a Percentage of Net Worth** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

- Note -

*This form shall only be included if Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) is applicable.*

### Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of joint ventures, each Joint Venture Partner must fill out this form separately, and provide the Joint Venture Partner name below:

Joint Venture Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Financial Data for Previous . . . . . Years [US$ Equivalent]** | | |
| **Year 1:** | **Year 2:** | **Year \_\_:** |

**Information from Balance Sheet**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Assets (TA)** |  |  |  |
| **Total Liabilities (TL)** |  |  |  |
| **Net Worth = TA-TL** |  |  |  |
| **Current Assets (CA)** |  |  |  |
| **Current Liabilities (CL)** |  |  |  |
| **Working Capital = CA - CL** |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Most Recent**  **Working Capital** |  | To be obtained for most recent year and carried forward to FIN-3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner’s FIN-3 |

**Information from Income Statement**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Revenues** |  |  |  |
| **Profits Before Taxes** |  |  |  |
| **Profits After Taxes** |  |  |  |
| * Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last \_\_\_\_\_ years, as indicated above, complying with the following conditions. * Unless otherwise required by Section 3 of the Bidding Documents, all such documents reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder’s parent companies, subsidiaries or affiliates. * Historical financial statements must be audited by a certified accountant. * Historical financial statements must be complete, including all notes to the financial statements. * Historical financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted). | | | |

### Form FIN - 2: Average Annual Turnover

Each Bidder must fill out this form.

The information supplied should be the Annual Turnover of the Bidder or each member of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed, converted to US dollars at the specified exchange rate.

In case of joint ventures, each Joint Venture Partner must fill out this form separately, and provide the Joint Venture Partner name below:

Joint Venture Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Annual Turnover Data for the Last . . . . Years** | | | |
| **Year** | **Amount**  **Currency** | **Exchange**  **Rate** | **US$**  **Equivalent** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| **Average Annual Turnover** | | |  |

### Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, usually comprising of Working Capital supplemented by credit line statements or overdraft facilities and others to meet the Bidder’s financial requirements for

its current contract commitments, and

the subject contract.

In case of joint ventures, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner name below:

Joint Venture Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Financial Resources** | | |
| **No.** | **Source of financing** | **Amount (US$ equivalent)** |
| 1 | Working Capital (to be taken from FIN-1) |  |
| 2 | Credit Line***a*** |  |
| 3 | Other Financial Resources |  |
| Total Available Financial Resources | |  |

*a* *To be substantiated by a letter from the bank issuing the line of credit.*

### Form FIN- 4: Financial Requirements for Current Contract Commitments

Bidders (or each Joint Venture partner) should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

In case of joint ventures, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner name below:

Joint Venture Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| **Current Contract Commitments** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name of Contract** | **Employer’s**  **Contact**  **(Address, Tel, Fax)** | **Contract Completion**  **Date** | **Outstanding Contract  Value**  **(X)** | **Remaining Contract Period in months (Y)** | **Monthly Financial Resources Requirement**  **(X / Y)** |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| Total Monthly Financial Requirement for Current Contract Commitments | | | | | | **US$** . . . . . . . . . . . . . . . . . |

### Form FIN - 5: Compliance Check of Financial Resources ( Criterion 2.3.3 of Section 3 )

#### Form FIN-5A: For Single Entities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **For Single Entities:** | **Total Available Financial Resources from FIN-3**  **(C)** | **Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN-4**  **(D)** | **Available Financial Resources net of CCC**  **(C-D)** | **≥** | **Requirement*a*** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Name of Bidder) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | 100% of Requirementfrom Section 3 - 2.3.3(b)  **$ 2,250,000.00** |

#### Form FIN-5B: For Joint Ventures

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **For Joint Ventures:** | **Total Available Financial Resources from FIN-3**  **(C)** | **Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN-4**  **(D)** | **Available Financial Resources net of CCC**  **(C-D)** | **≥** | **Requirement*a*** |
| One Partner: |  |  |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Name of Partner) | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | B(%) of Requirement  $ 1,350,000.00 |
| Each (Other) Partner: |  |  |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Name of Partner 1) | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | A(%) of Requirement  $ 562,500.00 |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Name of Partner 2) | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | A(%) of Requirement  $ 562,500.00 |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (Name of Partner 3) | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | A(%) of Requirement  $ 562,500.00 |
| **All partners combined** |  |  | **∑ (C-D)*b* =**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **≥** | 100% of Requirementfrom Section 3 - 2.3.3(b  $ 2,250,000.00  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

- Note -

*Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as evaluation work sheet, to determine compliance with financial resources.*

*a Requirement for the subject contract is defined in Criterion 2.3.3(b) of Section 3. Value A is the required percentage of the subject contract, which each partner must meet; and value B is the required percentage of the subject contract, which one partner must meet. A and B values are defined in Criterion 2.3.3 of Section 3 (Evaluation and Qualification Criteria).*

***b Σ (C – D) = sum of available financial resources net of current contract commitments (CCC) for all partners.***

### Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

|  |  |  |  |
| --- | --- | --- | --- |
| **Contract of Similar Size and Nature** | | | |
| **Contract No** . . . . . . **of** . . . . . . | **Contract Identification** |  | |
| **Award Date** |  | **Completion Date** |  |
| **Role in Contract** | * **Contractor** | * **Management Contractor** | * **Subcontractor** |
| **Total Contract Amount** | **US$** | | |
| **If partner in a Joint Venture or subcontractor, specify participation of total contract amount** | **Percent of Total** | **Amount** | |
| **Employer’s name**  **Address**  **Telephone number**  **Fax number**  **E-mail** |  | | |
| **Description of the similarity in accordance with Criterion 2.4.1 of Section 3** | | | |
| Participation in at least two contracts that have been successfully or substantially completed within the last 5years and that are similar to the proposed contract, where the value of the Bidder’s participation exceeds  $ 1,800,000.00. The similarity of the Bidder’s participation shall be based on the physical size, nature of works, complexity, methods, technology or other characteristics as described in Section 6 (Employer’s Requirements). |  | | |

### Form EXP - 2: Experience in Key Activities

Fill out one (1) form per contract. Please provide completion certificate from client with English translation if required.

|  |  |  |  |
| --- | --- | --- | --- |
| **Contract with Similar Key Activities** | | | |
| **Contract No** . . . . . . **of** . . . . . . | **Contract Identification** |  | |
| **Award Date** |  | **Completion Date** |  |
| **Role in Contract** | * **Contractor** | * **Management Contractor** | * **Subcontractor** |
| **Total Contract Amount** | **US$** | | |
| **If partner in a Joint Venture or subcontractor, specify participation of total contract amount** | **Percent of Total** | **Amount** | |
| **Employer’s name**  **Address**  **Telephone number**  **Fax number**  **E-mail** |  | | |
| **Description of the key activities in accordance with Criterion 2.4.2 of Section 3**  **(to be filled for the relevant criteria listed below)** | | | |
| For the above or other contracts executed during the period stipulated in 2.4.1 above, a minimum experience in the following key activities: |  | | |
| Design, supply, installation, supervision, commissioning of PV power plants ≥ 800kWp – at least 2 completed projects |  | | |
| Design, supply, installation, supervision, commissioning of PV- Diesel-Battery hybrid systems which include energy management system (to manage grid stability in case of variation in PV output and/or excess PV power production during periods of high radiation and low demand):  Minimum size of PV: 100kWp  Minimum size of battery: 50 kWh  Minimum size of Diesel: 50kW  – at least 2 completed projects |  | | |
| Design, supply, implementation, commissioning of Lithium-ion battery systems ≥50 kWh  – at least 1 completed project |  | | |
| O&M services for PV/Battery hybrid systems which include energy management system (to manage grid stability in case of variation in PV output and/or excess PV power production during periods of high radiation and low demand):  Minimum size of PV: 100kWp  Minimum size of battery: 50 kWh  – at least 1 completed projects |  | | |
| Design, supply, implementation, and commissioning, of LV distribution grid  – At least 1 completed projects of at least 10km LV cabling for a distribution grid. |  | | |
| Design, supply, implementation, commissioning of ice making plant of Minimum size 15 T.  At Least 3 completed projects |  | | |
| O&M Services for ice making plant of Minimum size 15 T.  At Least 3 completed projects |  | | |

### Form EXP - 3: Subcontractors

Fill out one (1) form per contract.

|  |  |  |  |
| --- | --- | --- | --- |
| **Contract for the Major Items** | | | |
| **Contract No** . . . . . . **of** . . . . . . | **Contract Identification** |  | |
| **Award Date** |  | **Completion Date** |  |
| **Role in Contract** | * **Contractor** | * **Management Contractor** | * **Subcontractor** |
| **Total Contract Amount** | **US$** | | |
| **If partner in a Joint Venture or subcontractor, specify participation of total contract amount** | **Percent of Total** | **Amount** | |
| **Employerʼs name**  **Address**  **Telephone number**  **Fax number**  **E-mail** |  | | |
| **Description of the major items in accordance with Criterion 2.5 of Section 3** | | | |
| *Insert criteria in accordance to Section 3, §2.5* |  | | |

1. Use one of the two options as appropriate. [↑](#footnote-ref-2)
2. If none has been paid or is to be paid, indicate “None.” [↑](#footnote-ref-3)
3. All italicized text is for use in preparing this form and shall be deleted from the final document. [↑](#footnote-ref-4)
4. Or 758 as applicable. [↑](#footnote-ref-5)