1. **General:**
   1. The following document describes the process for a request for proposal (RFP) of the Jordan Armed Forces (JAF) Potential vendors are invited to submit their proposals as a reply to the RFP.
   2. JAF is considering purchasing power system which shall include the supply and training of an integrated solution of hybrid OFF-Grid renewable energy system for the following components:
      1. Single-phase diesel generator set.
      2. Inverter/charger devices.
      3. 48v MPPT charge controllers.
      4. Remote control, programming and monitoring kit.
2. **Documentation:**
   1. All the requested documents, manuals and catalogues shall be in English language.
   2. Maintenance manuals which shall include the maintenance procedures, precautions, routine maintenance procedures, possible breakdowns and repairs.
   3. Operation manual which shall include step-by-step system start-up operation and safe shutdown.
   4. The provided manuals shall include the manufactures name, module number, parts list, and brief descriptions of all equipment and their basic operation features.
   5. Troubleshooting guides.
   6. Elaborated catalogues describing all the technical details of the offered equipment, general catalogues will not be accepted.
3. **Shipment and delivery:**
   1. . Delivery of equipment shall be based on CPT QAIA/Jordan or CIFAQABA seaport.
   2. . The equipment at Annexes (1+2+3+4) and all other needed components mentioned implicitly and/re explicitly in this RFP should be delivered to JAF warehouses within maximum period of 24 weeks from the date of the tender award.
   3. Transportation of all required equipment to JAF warehouses is bidder responsibility.
4. **Warranty:**
   1. Warranty period shall be as following:
      1. 24 months’ local agent warranty for all requested components.
   2. Warranty shall cover all equipment including hardware and software.
   3. During warranty period, defective or malfunctioned units shall be replaced free of charge within 30 days from notification by JAF.
   4. Repaired module shall be returned to JAF within 30 days.
   5. The manufacturer is required to provide the Repair and Return (R&R) policy after Warranty period.
   6. The Bidder shall pay all fees of goods and documentation imposed by the country of origin.
5. **Terms and conditions**
   * 1. The proposed equipment must be 100% brand new and manufactured not before year 2024.
   1. OEM certificate shall be presented for all equipment.
   2. Prices quoted shall be exempt from all governmental taxes and/or duties and include packing costs, shipping, and any other costs.
   3. All items quoted shall be genuinely brand-new and in accordance with the original manufacturer specification.
   4. JAF has the right to extend the validity of performance bond on the sellers account if the delivery delayed beyond the agreed delivery time, by an increment equal to the delay time.
   5. Bidder has to supply proposed equipment with the same prices as bid prices or lower during warranty period.
   6. All proposals shall include the following:
      1. Itemized price list for each type of proposed equipment.
      2. Two Bills of Material (BOM) shall be submitted: first one in the technical offer (not Priced) & second priced one in the financial offer.
      3. The Technical offer and the financial shall be submitted separately.
   7. Any questions or clarifications regarding the requirements shall be submitted before (10) working days of the tender closing date and must be delivered to the directorate of defense procurement.
   8. JAF reserves the right not to award the contract to the bidder of the lowest price, nor to purchase the whole BOM.
   9. The awarded bidder shall in all respects bear the consequences of any technical problem arising during warranty and after the warranty.
   10. Bidder shall enclose (one hard and one soft) copies of his proposal including technical data sheets for each proposed item.
   11. Any proposal that does not include technical specifications for the proposed solution shall be disqualified.
   12. JAF reserves the right to include/reject the specific optional items or requirements to fit its needs; therefore, the bidder is obliged to quote for all optional items separately in his financial offer.
   13. JAF reserve the right to increase and/or decrease the quantities of (generator sets, MPPT charge controllers, and inverter/chargers) before tender awarding by a percentage not exceeding 25% of the required quantities with the same prices according to any updates might require any modification.
   14. JAF reserves the right to contact the mother company to acquire information related to the offered items.
   15. JAF Shall not be responsible for any expenses or losses Incurred by the bidder in the preparation of his offer.
   16. Bidder shall guarantee the supply of spare parts whenever required of the offered equipment for a period of 10 years after the warranty period with bid prices modified by an escalation formula agreed on by JAF &bidder.
   17. Bidder shall provide all installation accessories, cables …etc. and any related materials needed.
   18. Spare parts quantities and prices shall be clearly included in the financial offer.
   19. The bidder shall provide and make point- by- point compliance statement to all items of the present specification according to provided compliance list and it is considered a vital part of bid documents.
   20. In case where the bidder is not fully compliant with the specifications, bidder shall state the reason and/or why should JAF reconsider his position.
   21. JAF has the right to cancel any part or the whole tender and/or to increase or decrease any other required conditions depending on JAF requirements.
   22. The Bidder is allowed to propose maximum two solutions/options only.
   23. Bidder has to provide all needed documents that clearly show it’s compliant with all required codes and standards mentioned in annexes.
   24. All proposed items must meet Jordanian codes and standards issued by Jordan standards and metrology organization and royal scientific society.
   25. One (O&M) laptop for local access shall be provided by the bidder, the laptop shall be core I7(H), 16GB RAM, 1TB SSD with licensed windows 11 operating system.
   26. One (O&M) fluke 1770 series three-phase power quality analyzer with recommended accessories shall be provided by the bidder.
6. **Technical description terms:**
   1. The proposed inverter/chargers and generator sets must be integrated with each other by a control system (kit) to perform as a hybrid power source once any breakdown occurs in solar energy system.
   2. The inverter/charger shall perform as inverter to convert DC current from Battery bank to AC current (AC load) when generator is off.
   3. The inverter / charger performs as charger once the generator is running to charge the battery bank with DC current.
   4. The inverter/charger shall supply the AC loads and charging the Battery bank at the same time when generator is running.
   5. The control system must provide the following features:
      1. Automatic start of the generator based on the voltage value of the battery bank, preset value.
      2. Automatic stop of the generator based on the voltage value of the battery bank, preset value after charging process is done.
      3. Control of pre heating and cooling down timer of the engine.
      4. Control of the charging current output from inverter/charger.
      5. Control of charging stages (multi stage, bulk, absorb, float).
      6. Control of engine STATUS (ON, OFF, AUTO).
      7. Selecting the battery bank type (GEL, AGM, FLOODED).
      8. Control of over/under DC voltage limits of inverter/charger device.
      9. possibility to add more than one inverter/charger to the system to work in parallel.
      10. Monitor all parameters about inverter/charger such: voltage, current in-out, temperature, engine status.
      11. Control system shall provide complete system level connectivity and programming.
      12. Control system shall be capable to connect multiple inverter/chargers to perform parallel stacking.

1. **Remote monitoring system (OPTIONAL):**
   1. The proposed remote monitoring system capable of remote monitoring for all operational parameters of (charge controllers, charger/inverter devices, generator sets) to be viewed in JAF control site (Amman).
   2. This monitoring system shall be delivered with all needed components such as: (1-workstation, 1-LCD screen 50”, switches, routers, …, etc.).
   3. Remotely monitoring system data must be carried to control site by JAF network (Ethernet ports).
   4. Any needed software needed to operate the monitoring system must be licensed free.
   5. This part of the tender shall be proposed separately in technical offer and financial offer.
2. **Training course:**
   1. Renewable energy system training course **(Two training trips 6 engineers; 7 working days for each trip) as:**
      1. The training necessary to operate, test, and support the system (hybrid renewable energy system).
      2. Eligible bidders are requested to respond to the training requirement and provide a suggested training schedule showing the timetable for each day of the course and requested pre-requisites.
      3. Training shall be at the manufacturer training center.
      4. Training cost shall cover:

a. Training fees

b. Training subsistence (Air tickets, respectable accommodation, meals and local transportation).

**Annex 1**

**Technical Specifications and Requirements**

**Single-phase standby canopied diesel generator set (QUANTITY = 15).**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Characteristics** | **Description** | **Note** |
| 1 | Nominal voltage L-N | 220-230v AC | Single phase |
| 2 | Nominal capacity | 11 Kw |  |
| 3 | Nominal frequency | 50 Hz |  |
| 4 | Fuel type | Euro 5 |  |
| 5 | Generator type | Canopied |  |
| 6 | Cooling | Water cooling |  |
| 7 | Performance grade | G2 | With certificate |
| 8 | Control panel | Deepsea electronics, Insight |  |
| 9 | Alternator | Meccalti , Stamford |  |
| 10 | Starting Battery | 12v | With battery charger |
| 11 | Governor | Electrical |  |
| 12 | Fuel tank capacity | >= 300 litter | Base tank |
| 13 | Oil replacement valve | Outer canopy valve |  |
| 14 | Water heater | Heater jacket |  |
| 15 | Remote start / stop | Available |  |
| 16 | Usage | Standby |  |
| 17 | Exhaust | Sound proof silencer |  |
| 18 | MCCB | 2 pole |  |
| 19 | Protection | * Over / Under voltage. * Over current. * Over / Under frequency. * Emergency stop button. * Phase failure. |  |
| 20 | Standards | IEC 60034 , ISO 5828 , ISO 3046 |  |
| 21 | Spare parts | * Battery charger (Q=3). * Heat jacket (Q=2). * PLC, deepsea (Q=3). * Oil filter (Q=24). * Fuel filter (Q=24). * Air filter (Q=24). * Main belt (Q=12). |  |

**Annex 2**

**Technical Specifications and Requirements**

**Off-Grid Power Inverter / Chargers (QUANTITY = 30).**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Characteristics** | **Description** | **Notes** |
| 1 | Nominal AC voltage | 230 V |  |
| 2 | Nominal AC frequency | 50 Hz |  |
| 3 | Nominal DC voltage  Battery input | 48v | (36-64)Vdc |
| 4 | Nominal capacity | >= 4000w |  |
| 5 | AC output wave form | Pure sine wave |  |
| 6 | Cooling | Internal cooling – fan cooling |  |
| 7 | Power factor | >= 0.95 |  |
| 8 | Inverting / charging efficiency | >= 90% |  |
| 9 | Protection | * Over current. * Over voltage. * Under voltage. * Over charge. * Over temperature. * Corrosion. |  |
| 10 | Charging stages | Five stage charging capability ( bulke , absorbe , equalize , float , and testing ). |  |
| 11 | Standards | CE , UL1741 , ETL , ASTM E136 (FOR CHASSY) |  |
| 12 | Mounting | Wall mounting |  |
| 13 | Parallel stacking | Available |  |
| 14 | Battery temperature sensor | Available |  |

**Note :**

**A Control kit which described in term ( No.5 of RFP) must be delivered with each inverter/charger device (30 control kit) with all needed accessories.**

**Annex 3**

**Technical Specifications and Requirements**

**MPPT 48v charge controllers (quantity = 70).**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Characteristics** | **Description** | **Notes** |
| 1 | Pv input DC voltage | >= 150 Vdc |  |
| 2 | Pv input DC current | >= 100 Adc |  |
| 3 | Nominal output voltage | 48 Vdc | (36-64)Vdc |
| 4 | Continuous output current | >= 90 Adc |  |
| 5 | Power conversion efficiency | >= 98% |  |
| 6 | Charging regulation | Automatic three stages: bulk , absorb, float | Equalization available auto & manual |
| 7 | Protection | * Battery revers polarity. * Battery short circuit. * Battery over voltage. * PV revers polarity. * ARC fault protection. |  |
| 8 | Graphical display | Available |  |
| 9 | Cooling | Internal cooling (fan cooled) |  |
| 10 | Operating temperature | -40 – 50 C |  |
| 11 | Environmental rating | IP 30 | Indoor use |
| 12 | Standards | EN 61000-6-3/1  EN 61000-4-3/4/5/6 |  |

**Annex 4**

**Technical Specifications and Requirements**

**Accessories:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Characteristics** | **Description** | **Notes** |
| 1 | DC BUS PANEL with MCCB | * Metal enclosure. * Isolated (Positive + negative) bus * 2x200 A DC MCCB circuit breaker. * 6 x 100 A DC MCCB circuit breaker. * Earth busbar. * IP = 65 | Quantity = 10 |
| 2 | DC input PANEL  (from PV) | * Metal enclosure. * 4 x 100 A DC MCCB circuit breaker. * Earth busbar. * IP = 65 | Quantity = 10 |
| 3 | Combiner box  (PV modules connection) | * Metal enclosure. * 5 x 16 A DC FUSE with fuse holder for the negative side. * Positive busbar. * Earth busbar. * IP = 65 | Quantity = 30 |
| 4 | AC load PANEL | * Metal enclosure. * 4 x 32, TWO POLE A AC CB circuit breaker. * Earth busbar. * IP = 65 | Quantity = 10 |
| 5 | DC cables | * 1x70mm * 1x35mm * 1x16mm | Quantity = 400 m each |