## Anneuxure -II: Amendments - 02

| Amendments (BID No: SECI/C&P/IITB/SoUL/102016 Amendment - 02) | | | | | |
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| NIT: SECI/C&P/IITB/SoUL/102016 | | | | | |
| **Sl** | **Section** | **Point** | **Sub-point** | **Original Version** | **Amendment** |
| 1 | II | 1 | 1.1 | Procurement or manufacturing of SoUL components as per technical design and specifications provided by IITB mentioned in the tender document (Annexure-3). | Procurement or manufacturing of SoUL components as per technical specifications provided by IITB mentioned in the tender document (Annexure-3). |
| 2 | II | 1 | 1.1 | Carry out replacement of faulty SoUL kit components during warranty period in liason with IIT Bombay. | Carry out replacement of faulty SoUL kit components during warranty period in liason with IIT Bombay during tenure of project. |
| 3 | II | 1 | 1.1 | Provide prototype of five SoUL kits (assembled) and five SoUL kits (disassembled form) to SECI/IITB | Removed |
| 4 | II | 3 | 3.1(ii) | The organization should have produced and sold more than 10,000 sol ar LED lamps//kits in last three years- Copy of Purchase Order and Material Receipt certificates/Work completion certificates are required to be submitted in this regard. | The organization should have produced and sold more than 5,000 solar LED lamps//kits in last three years- Copy of Purchase Order and Material Receipt certificates/Work completion certificates are required to be submitted in this regard. |
| 5 | II | 7 | 7.2(f of vi) | Sample submission: Along with the above mentioned documents, each bidder is required to submit 10 prototypes (consisting of 5 assembled and 5 un assembled SoUL kits). The sample shall contain documentation pertaining to the following: | The copy of lamp's final technical design, testing report and test certificate on testing at MNRE accredited agency must be submitted by 15th December, 2016. |
| 6 | II | 11 | 11.1 | The bidders shall quote the cost of each SoUL kit as part of the price bid. The price of a SoUL kit cannot be more than Rs.450/- per unit, which includes…. | The bidders shall quote the cost of each SoUL kit as part of the price bid, which includes all taxes and duties, as applicable. |

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| 7 | II | 11 | 11.3 | The bidders shall be necessarily required to quote two price bids, one each for an assembled kit and one for an un-assembled kit. The final decision of choosing the type of kit (assembled or unassembled) to be awarded to the successful bidder(s) shall be decided by SECI/IIT Bombay. However, it is clarified that ONLY either of the two types (i.e., assembled or unassembled) shall be finally selected for the entire quantity of kits and there shall be no part-capacity award for each type of the kit. | The bidders shall be necessarily required to quote two price bids, one each for an assembled kit and one for an un-assembled kit. The selection of successful bidder (s) will be done on the basis of evaluation of bid for unassembled kit. |
| 8 | II | 12 | 12.2 | Accordingly, the bidder quoting the lowest price (L1), which is the sum of the kit cost and transportation cost per kit, shall be awarded a minimum quantity of 40% of the total quantity of 5 lakh kits envisaged in the tender. The L1 price shall be called as "Approved Price". | Accordingly, the bidder quoting the lowest price (L1), which is the sum of the kit cost of un assembled kit and transportation cost per kit, shall be awarded a minimum quantity of 40% of the total quantity of 5 lakh kits envisaged in the tender. The L1 price shall be called as "Approved Price". |
| 9 | II | 22 | 22.1 | Bidders are to bid as per the designs and component list provided by IIT Bombay. | Bidders are to bid as per the technical specification provided |
| 10 | II | 24 | 24.1 | Solar Module: Minimum 5 years warranty from the date of Delivery to the respective locations. | Solar Module: Minimum 10 years warranty from the date of Delivery to the respective locations. |
| 11 | II | 24 | 24.2 | Batteries: Minimum 3 year warranty from the date of Delivery (however as per the technical specification battery is expected to work for minimum 1100) | Batteries: Minimum 5 year warranty from the date of Delivery (however as per the technical specification battery is expected to work for minimum 1100 cycles) |
| 12 | II | 24 | 24.3 | Electronic accessories (PCB, Switch, Socket, LED, wires): Minimum 1 year warranty from the date Delivery to the respective location. | Electronic accessories (PCB, Switch, Socket, LED, wires): Minimum 3 year warranty from the date Delivery to the respective location. |
| 13 | III | 8 | 8.1 | 80% payment of the shipment lot will be made after delivery of the corresponding lot and acceptance of the same by IIT Bombay. Balance 20% payment will be released after complete supply. | Payment of the shipment lot will be made after delivery of the corresponding lot and acceptance of the same by IIT Bombay. |

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| 14 | IV | 4 | 4.1 | The maximum price to be quoted by the bidder (excluding transportation cost) has been kept as Rs. 450/- per unit. Bid evaluation will be carried out considering the information furnished by Bidders as per provisions specified in ITB and GCC of this tender. The details evaluation and selection of bidders are described in subsequent clauses in this Section. | The maximum price per unit to be quoted by the bidder sould be excluding transportation cost. Bid evaluation will be carried out considering the information furnished by Bidders as per provisions specified in ITB and GCC of this tender. The details evaluation and selection of bidders are described in subsequent clauses in this Section. |
| 15 | IV | 4 | 4.2 (B) (iii) | In this stage, evaluation will be carried out based on the price quoted by each bidder, which is the sum of the price quoted for the kit and for the transportation cost per kit. The price quoted (excluding transportation cost) cannot be more than Rs. 450/- per unit. Those bids, whose price bid is | In this stage, evaluation will be carried out based on the price quoted by each bidder, which is the sum of the price quoted for the un assembled kit and for the transportation cost per kit. |

## Annexure-2

**Note:** Bidders should supply the SoUL kit as per the technical specification provided. Technical speciation of all components is provided in detail in this Annexure-3. For latest technical specification please visit to www.openhardware.iitb.ac.in. The files in appropriate format will be available for download for different component, mainly circuit and body of lamp. The specifications are likely to change slightly and will be finalized by pre-bid meeting. These specifications are made available for cost estimation.

The hardware design which has been released as open source under creative commons are available at http://openhardware.iitb.ac.in/. Manufacturer who uses this design should refer the terms & conditions in above mentioned link.
The bidders proposing the design other than the design available in above mentioned link of open source hardware, have to ensure that the design meets all the technical specification of the tender and all the hardware are physically compatible to the above open source design.

**Technical Specifications of Solar Urja Lamp Kit**

- The main purpose of Solar Urja lamp (SoUL) is a solar powered lamp suitable for mainly study purpose but not limited to study only. This lamp is to help those students and families who are deprived of the clean and economical light, mainly to study at home after school hours but the lamp should also be useful for other lighting purposes.

- The components of SoUL (as per design and specification given in the Table below) will be purchased from supplier and not the assembled lamp.

- There should be a provision to print logos or text on the SoUL and its packaging box as per requirement. The supplier should not have his or her own logo on the lamp or on the box.

- The bidders have to bid for all the parts of the SoUL kit. The PV module, plastic body and PCB must be manufactured in India.

The disassembled kit is divided in five parts which include following:

1. Solar PV module
2. Battery
3. PCB with components, load wire and LED
4. Lamp body with gooseneck and screws
5. Packaging

The technical specification of each of the above part given below:

## 1. Specification of PV module

| | |
|---|---|
| Cell Type | Mono or Polycrystalline Silicon solar cells |
| | Module should be manufactured in India |
| Lamination | Toughened glass cover and EVA sheets |
| Module Frame | Ultra High Impact Polystyrene (Jet Black Colour) |
| No. of Solar Cells in the Panel | 10 |
| Max. Power rating | $V_{mp} \times I_{mp} \geq 2.5W_p$ |
| Voltage at maximum power point | > 5 V |
| Connecting cable – Length | 2.5 Mtrs |
| Electrical Data*(Nominal): | Under STC |
| Warranty: | Minimum 10 Years from the date of delivery |
| Supplier should put logo of SoUL inside the glass and text “Made in India” before lamination. | |

## 2. Specification of battery

| | |
|---|---|
| Battery chemistry type | Rechargeable LFP ($LiFePO_4$) battery |
| Nominal Operating Voltage | 3.2 V (2100 mAh) measured at Standard condition |
| Temperature | $10^oC$ to $50^oC$ |
| Battery casing | 18650/22650 |
| Minimum Number of charge-discharge cycles | 1100 |
| D o D | Up to 80% |
| Warranty | Minimum 5 year from the date of delivery |

## 3. Specification of Circuit, Load Wire and LED

| **Circuit** | | |
|---|---|---|
| Dimension | | Refer www.openhardware.iitb.ac.in |
| Reverse current protection | | To be included |
| Battery upper voltage cut-off | | 3.6 V |
| Battery lower voltage cut-off | | 3 V |
| LED driver type | | Constant current |
| Driving Current | Mode 1 | 50 mA |
| | Mode 2 | 150 mA @150 Lux |
| Stand by/Leakage current | | < 10 mA |
| Indication | Red | ON @ low voltage = 3 V |
| | Green | Blinking while charging |
| | | ON @ fully charged = 3.6 V |
| Circuit Efficiency | | 80-85% |
| Warranty | | Minimum 3 year from the date of delivery |

| **LED** | | |
|---|---|---|
| Technology | | White Light Emitting Diode (W-LED) |
| Operating Voltage | | 6.3 V |
| Power Consumption (Pmax) | | ≤ 1.5 Watt (Max) |
| Illuminance | Mode 1 | Minimum 50 Lux when measured at the periphery of the 45 cm diameter from height of 30 cm. |
| | Mode 2 | Minimum 150 Lux when measured at the periphery of the 45 cm diameter from height of 30 cm. |
| Luminous performance of LED (Efficacy) | | Minimum 140 Lumen per Watt |
| Operating Temperature | | $30^0$C to $85^0$C |
| Color rendering and appearance | | CCT: between 5700K to 6500K |
| Warranty | | Minimum 3 year from the date of delivery |

| **Load wire** | |
|---|---|
| Type of wire | Teflon coated, single core |
| Diameter of wire | 0.85 mm (Outer Dia) |
| Length of wire | 45 cm |

## 4. Specification of lamp body and screws

| **GENERAL** | |
|---|---|
| Design | Refer www.openhardware.iitb.ac.in |
| Lantern housing material | High Impact Polystyrene |
| Ingress Protection (IP) | IP 33<br>Special protection is required for preventing dust entering from the switch or through any other parts into the body of the lamp. |
| Lamp look | As per the design provided by IITB |
| Portability | Adjustable gooseneck spring to adjust light |
| Operating manual in 3 languages ( for beneficiary) | 1 per SoUL kit |
| Warranty Card( for beneficiary) | To be made available per SoUL kit |
| **Screws** | |
| Size | Refer www.openhardware.iitb.ac.in |
| Material | sheet metal screw |

## 5. Specification of Packaging

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|---|---|
| Maximum size of packaging box | X*Y*Z<br>(Packaging box should be able to house assembled lamp and solar panel together.) |
| Packaging material | 3 ply cardboard box |
| Printing on package | High quality colour printing (4 colors) on package should be possible. Logo and text to be printed on box. |
| Warranty Card | |
| Operating Manual | 1 per SoUL kit |

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|---|---|
| Uses and Maintenance manual | 1 per SoUL kit |
| Warranty Sticker (to be used for sealing) | 1 per SoUL kit |
| SOUL Logo | 2 per SoUL kit |
| Other Logo | Funding organization logo |
| Serial number Sticker (duplicates) | 2 per SoUL kit |

**IMPORTANT NOTE:** Solar PV module, PCB and plastic body of the SoUL manufactured in India are only accepted for this project.

**Testing will be done of the following components:**

| **Components** | **Parameters** | **Comments** |
|---|---|---|
| **Solar Lamp Kit** | Make of components | |
| **General (including Lamp Body)** | Lamp housing material | |
| | Ingress Protection | |
| | Portability | |
| | Physical condition | |
| **Light Emitting Diode(LED)** | Make | |
| | Colour rendering and appearance | |
| | Light appearance | |
| | Light distribution | |
| | Operating Voltage | |
| | Power Consumption (P max) | |
| | Illuminance | |

| | | |
|---|---|---|
| | Luminous performance of LED | |
| | Operating Temperature | |
| **Energy Storage System** | Battery chemistry type | |
| | Make | |
| | Nominal Operating Voltage (D.C.) | |
| | Battery capacity (mAh) | |
| | D o D | |
| | Connectivity | |
| | Physical condition | |
| **Solar Panel** | Make | |
| | Cell Type | |
| | Max. Power rating | |
| | Connecting cable length | |
| | Maximum module Area | |
| | Electrical Data*(Voc, Isc, Wp, Imp, Vmp): | |
| | Physical condition | |
| **Printed Circuit Board (PCB)** | Operating Voltage(D.C):<br>- PV module point<br>- Battery Point<br>- LED point<br>- Switch point | |
| | Physical Condition | |

| | | |
|---|---|---|
| | Connectivity/ soldering points | |
| | Indications for battery charge<br>Indicator LED | |
| **Switch** | Physical condition | |
| | Number | |
| | Connectivity | |
| **Wires** | Number | |
| | Connectivity | |
| **Screws** | Number | |
| | Physical condition | |
| **Socket** | Number | |
| | Physical condition | |
| | Connectivity | |
| **Spare Components** | Number | |
| | Technical check | |
| | Physical Condition | |

In addition to SoUL kit, one set of following must be supplied to IITB within 15 days for inspection, if a vendor is selected as rate contract:

- Operating manual for user of SoUL in 3 languages ( English, Hindi and other regional language for which information would be provided after tendering)
- Printing and labeling on boxes
- Printing and labeling on SoUL body
- Assembly training manuals, operating manuals and testing manuals and videos in other Indian languages needs to be provided within 15 days whenever requested by IIT Bombay