



ADDENDUM 02

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| މަޢުލޫމާތު Project No: | TES/2016/G-012 |
| މަޢުލޫމާތު Issued Date: | October 9, 2016 |
| މަޢުލޫމާތު Project: | Design, Supply, Installation and Maintenance of renewable energy hybrid power plants in Haa Alif Atoll – Maldives |
| މަޢުލޫމާތު Deadline for submission: | October 26, 2016 Wednesday at 1000 hours |
| މަޢުލޫމާތު No. of Pages: - 6 | |

Please include this clarification when submitting the proposal

1. Please find the **Clarification 2** issued, attached with this sheet.
2. Note that an update to the drawing set is uploaded to the website along with this addendum

Please be informed that the bid submission will be held on **Wednesday, 26th October 2016 at 1000hrs**, at Ministry of Finance and Treasury, Public Procurement Division's Meeting Room.

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Name: Aminath Juweriya

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Signature:





Ministry of Finance and Treasury
Male' Republic of Maldives

Preparing Outer Islands for Sustainable Energy Development

Design, Supply, Installation and Maintenance of renewable energy hybrid power plants in Haa Alif
Atoll – Maldives

Addendum 02

Section 6 – Chapter 7.9 Fuel Level and Consumption Meter

initial version:

7.9.1 There shall be fuel day tank with level sensor with enough capacity to run the generator for at least 12 hours at rated output. Fuel flow meter shall be implemented to provide actual fuel consumption (subtract fuel supply path and return path) and digital pulse output which can be interfaced with SCADA system for storing in the database.

Amended version (replace the initial version):

There shall be fuel day tank with level sensor with enough capacity to run the generator for at least 12 hours at rated output. Flow meters to measure the consumed fuel at each Generator shall be installed for all existing and new gensets. For all 14 islands the flow meters shall be directly installed between the daily tank of each generator and the main fuel tank according to the attached drawing in attachment "Typical fuel tank drawings.

Fuel flow meters shall be interfaced to the local SCADA system.

Requirements for installation:

- Before fuel flow meter contractor shall install a ball valve in order to isolate the line for maintenance of flow meters and days tanks.
- Fuel flow meter and valve shall be with flange connections and bolt connected.
- Fuel flow meters, valves and accessories shall comply in all respects to the intended use in terms of material, premises, temperature, weather, etc.
- Operating voltage and signal output cabling shall be included in the scope

Specifications for the fuel flow meters:

- Nominal Diameter: DN40



- Connection Type: Flange
- Nominal Flow Rate: 2000 to 8000L per hr
- Max Permissible error: +/- 0.2%
- Display: Flow Rate in L/hr, Volume in L
- Fuel flow meter shall have local reading and output characteristic for remote reading, preferably with RS485 connection. Local Display > 6 digits
- Output: RS-485
- Ambient Temperature: 25 to 50°C
- The flow meters shall be digital and integrated in the PCMS.
- Differential flow meters are not allowed.”

Section 6.1 – Chapter 3 PV Inverter

Addition to Section 6.1 Chapter 3:

“The inverters have to be installed in order to withstand prevailing climate conditions. All PV inverters will be mounted on outside walls of the buildings where PV power plants will be installed, at an appropriate height to allow easy maintenance. Walls will be defined together with the Employer. Moreover:

- The PV inverters shall be protected by the rain and direct solar irradiation with a corrugated roof sheet (lower edge: minimum 2m, minimum slope 10°).
- The area of the PV inverters shall be surrounded by a completely closed wire mesh fence (wire diameter \geq 2mm) without any hole up to the corrugated roof sheet. Access through a locked door.”

Section 6.1 – Chapter 6.5 Location and Battery System Layout

Addition:

6.5.3 Instead of battery rooms the suppliers can offer prefabricated containerized BESS solution without compromising the requirements mentioned in 6.5.2

Attachments to amendment

Attachment No1 “Typical fuel tank drawings”





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Clarification 02

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| 1 | According to the section 2.10 Each string of modules shall be connected via array junction box with an isolator switch, If proposed inverter has inbuilt DC Surge arrestor and inbuilt isolator for the DC side can we connect strings directly to the inverter instead of using DC junction boxes | No, each string of modules shall be connected via array junction box with an isolator switch |
| 2 | Minimum clearance from PV module to the roof is benchmarked to 100mm in Section 2.12. please clarify this clearance value mentioned from top side from the PV module or bottom side of the PV module | Minimum clearance from bottom side of the PV module |



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| 3 | Ground mounted PV arrays suggested for some islands. Ground mounted mounting structure specifications are not provided. Please Clarify | <p>PV modules ground mounting structure:</p> <ul style="list-style-type: none"> • Complete mounting structure (waterproof roof and least 12-15ft high), hardware etc. shall be suitable for ground mounting and supply & installation shall be in the scope of the Bidder. • The structure shall be designed for easy replacement of any module and in line with site requirements. • The structure shall be designed for simple mechanical and electrical installation. It shall support PV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. • The mounting structure shall be hot dip / spray galvanized MS angles of proper size. Galvanization thickness shall be of min. 120µm. • In general bolts, nuts, shims and other hardware should be zinc plated. Fasteners visible outside shall be of stainless steel SS304. The generally applicable engineering principle will be that fasteners shall be equal to or of greater corrosion resistance than the most corrosion resistant metals being fastened. • The array structure and foundation shall withstand wind speed of 150 KM/hour. • The design and detailed layout of the module mounting structures should be submitted with the technical bid. • Sample conceptual design of the ground mount structure is provided. <p>Example Ground Mount Installation Photo is provided in the Section 6 - Appendices</p> |
| 4 | In order to provide PV Panel layout diagrams, Calculate tentative cable lengths bidder needs to have .kmz file of PV locations/Power House on each island. Please provide this | Please refer to Section 6 - Drawings for each island roof layout diagram and Section 6 - Appendices SLD which provides the required cable lengths. |
| 5 | According to section 2.14.6 ERQ Lugged cable between module and array frame not allowed in this installation. Please suggest the required bonding and earthing method | Please refer to ERQ 6.1 Section 12 - Earthing |
| 6 | Is that okay to limit String inverters active and reactive power via P/F and Q/V droop instead of hard wired connection | It is the requirement of the EMS system to control String inverters active and reactive power via P/F and Q/V droop |
| 7 | As per section 6 - 6.1.5 Battery inverter overload capability 150% for 5 min. This time duration looks bit abnormal value, please confirm this | The Battery inverter overload capability 150% should be for 1 minute instead of 5 min. |
| 8 | Can we use ISO Containerized solutions for BSS+ BPCS instead of civil structure | Yes |
| 9 | PV String inverters mounting location/ method not specify in the tender document. Please clarify the locations (Existing Walls or Rooms) | Existing walls or room |
| 10 | Do we have to install ESE, Franklin Rods for lightning protection as per In section 12.1.5 | please comply the requirement for earthing as per ERQ section 12 |



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| 11 | In section 9 Appendix 8, bidder should provide functional guarantees of the facility as per Section 3 Paragraph 1.3.4. If bidder fail to fulfill that requirement, contractor has right to elect liquidate damage from the bidder. According to Section 3 1.3.4 bidder has to guarantee specific yield (kWh/kWp) for each island but specific yield is directly related to the Global Horizontal Irradiation for that year and Irradiation levels can be vary year to year then how can bidder guarantee about natural resources available at the site for a give year ? And also for fuel saving amount is depend upon the consumption pattern for a specific year and it can be vary year to year. How can bidder guarantee about fuel savings as per section 1.3.4 since it is subjected to change according to load pattern ? | In section 9 Appendix 8, the penalty will kick in only if the contractor fail to attain 90% of the guaranteed specific yield. This is to compensate any possible variation in irradiance level. Fuel saving table is provided for information purposes only, bidders are not asked to provide fuel saving commitment. |
| 12 | Do we have to submit Homer Simulation results for each island ? Will it be sufficient PVSyst simulation instead of Homer software simulation results ? | PVSyst simulation is sufficient |
| 13 | In order to run homer simulation, we need load variation pattern data in excel format to feed Homer software. Please provide load curves in excel format. | PVSyst simulation is sufficient |
| 14 | Please clarify whether the project is exempt from all the import duties. | All equipment and material procured under the project are exempted from duty. |
| 15 | In Section 4, Schedule No 1 (BOQ), in item no 13 for each island, there is a LV feeder pillar mentioned. But is it required for each and every island? If it is required, please provide the number of required feeder pillars for each island | one LV feeder pillar as part of new sync panel per island |
| 16 | Do we have to supply two feeder pillars for island A-10. As per our understanding, there are two existing feeder pillars in island A-10, to which we can connect Solar PV | Yes, for A-10 existing feeded pillar can be utilized |
| 17 | Request to extend bid submission date until 16 November 2016 | Bid submission date has been extended from 16th October 2016 to 26th October 2016. there will be no further extension will be granted. |
| 18 | can we propose Thin Film (CdTe), instead of Monocrystalline or Polycrystalline | Only Monocrystalline and Polycrystalline are acceptable. |

