**MINIMUM TECHNICAL REQUIREMENT:**

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| **#** | **Item** | **Minimum requirements** | **Supplier’s Compliance to the Required Technical Specifications** |
| **1** | **PV modules:** |
| 1.a | Model: | To be specified by the bidder |   |
| 1.b | Modules model and peak power | 72 cells / Min 330 Wp |   |
| 1.c | Modules positive tolerance | 0/+5 Wp |   |
| 1.d | Total number of modules | To be specified by the bidder |   |
| 1.e | Modules standards | IEC 60364-7-12, IEC 62548 |   |
| 1.f | Module maximum voltage certification | To be specified by the bidder |   |
| 1.g | Peak power warranty after 20 years | Minimum 80% of nominal power |   |
| 1.h | Minimum efficiency of the module | 16% |   |
| 1.i | Junction box protection | IP65 |   |
| 1.j | Warranty time | At least 10 years |   |
| **2** | **DC connectors** |
| 2.a | Connectors standard | Multi Contact 4 / Amphenol H4 |   |
| 2.b | DC connector Model | To be specified by the bidder |   |
| 2.c | Standards | IEC 62548, IEC 62852 , EN 50521:2008, TÜV certification for VDE 0126-3 |   |
| 2.d | Rated voltage | 1000V DC |   |
| 2.e | Protection | IP2X disconnected, IP 67 connected, Class II |   |
| 2.f | Temperature range | -30°C to 90°C, max 120°C |   |
| **3** | **DC cables** |
| 3.a | Operating temperature | -40°C to +90°C, max 120°C, 250°C when short-circuited (5 seconds) |   |
| 3.b | Voltage | 1500V DC |   |
| 3.a | Resistance per unit length at 20°C  | IEC 60228  |   |
| 3.c | DC cables Model:  | To be specified by the bidder, but only solar specified product allowed |   |
| 3.d | Combustion gases and smoke corrosivity  | IEC 60754-1 and IEC 60754-2 standards (halogen-free) |   |
| 3.e | UV-resistance | SEPAP testing during 500 hours at 60°C |   |
| 3.f | Aging | 20000h at 120°C in accordance with IEC 60216 standard |   |
| 3.g | Resistance to oils and chemicals  | IEC 60811-2-1  |   |
| 3.h | Flexibility | Class 5 of IEC 60228 |   |
| **4** | **Inverters:** |
| 4.a | Inverters Model: | Inverter products shall be provided by the preferable manufacturers: SMA, TMEIC, Schneider, General electric, ABB, Sungrow |   |
| 4.b | Total number of inverters | To be specified by the bidder |   |
| 4.c | Nominal inverter AC power at 25°C and 50°C (kVA) | 10kVA |   |
| 4.e | Total inverter AC power at 25°C and 50°C (kVA) | 50kVA |   |
| 4.f | Maximum outdoor temperature without derating (°C) | 50°C |   |
| 4.g | Total harmonic distortion THD  | ≤3% |   |
| 4.h | Inverter class protection (IP) | IP65 |   |
| 4.i | Inverter efficiency (%) | Maximum yield > 97.5%, European yield > 97% |   |
| 4.j | Self-consumption per inverter during operation at 25°C / during the night (kW)  | < 1W |   |
| 4.k | Permissible input voltage  | > 1.25 x Voc (open circuit voltage) of the modules strings with a cell temperature of 10°C  |   |
| **5** | **AC cables** |
| 5.a | Voltage assigned | 0.6/1 kV A.C |   |
| 5.b | Protection class | Class II |   |
| 5.c | Temperature range | -30°C to 90°C |   |
| 5.d | Flame retardant | Type C2 in accordance with IEC 60332-1 standard |   |
| 5.e | Cables resistant to immersion | AD7 |   |
| 5.f | DC cables vendor list | To be specified by the bidder |   |
| **6** | **Cable tray:** |
| 6.a | Standards | IEC 61 537  |   |
| 6.b | Protection | UV protection or mechanical cable protection |   |
| **7** | **Mounting structures:** |
| 7.a | Material requirements | Bolted aluminum alloy or hot-dip galvanized steel  |   |
| 7.b | Standards | ISO 14713-2:2009  |   |
| 7.c | Tilt angle of the tables (°) | 10° |   |
| 7.d | Table pitch (m) | 5m |   |
| 7.e | Inter row space (m) | > 1 m |   |
| 7.f | Losses due to inter row shading, as per PVsyst (%) | To be specified by the bidder |   |
| 7.g | Distance between bottom edge and ground | min 1.40m |   |
| 7.h | Maximum wind speed considered for structure design | To be specified by the bidder with reference to site conditions and local standards |   |
| 7.i | Earthing of each row of tables : Y/N | Y / in accordance with local standards |   |
| 7.j | Equipotentiality : connection of each table to its neighbour : Y/N | Y / in accordance with local standards |   |
| 7.k | Coating of screw and bolts : Y/N | Y/ with special protection and in accordance with local standards |   |
| **8** | **Monitoring:** |
| 8.a | Interval time for data collection | 10min |   |
| 8.b | Data storage capacity | Minimum 30 days |   |
| 8.c | Monitoring level | Data from weather station, inverters, electrical system |   |
| 8.d | Monitoring solution  | To be specified by the bidder |   |
| 8.e | Weather station | As per technical specification |   |
| **9** | **Operation and Maintenance:**  |
| 9.a | Number of cleaning per year quoted | To be specified by the bidder |   |
| 9.b | Cleaning solution specification (wet or dry + equipment specification) | To be specified by the bidder |   |
| **10** | **Guaranteed Performance Ratio** |   |   |
| 10.a | Guaranteed Performance Ratio at Provisional Acceptance | > 95% of the provided PR (yield estimation study) |   |
| 10.b | PV system report provided | Y |   |