**Section II: Schedule of Requirements**

| **IUS-AF2-UWS-GAYD-005** | | | | |
| --- | --- | --- | --- | --- |
| **Supply, delivery and test of 3 Submersible pumps units (bowel assembly, Motors, Cables, Control panels, Riser Pipes, etc.) complete with all required connections, gaskets, bolts and accessories, to be delivered to National Water & Sanitation Authority – Al Ghaydah Branch for**  **Wells #: 15,17 & 18 at Al-Jazaa Water Wells Field** | | | | |
| **NO** | ITEMS | | **UNIT** | **QTY** |
| 1 | **Submersible pumps and Heavy-duty submersible Motor, under the following conditions:**  **Well #: 15 at Al-Jazaa)**   * Pump efficiency > 70% at duty point, driven by a heavy-duty submersible motor three phase induction, suitable for VFD starting. * The pump has to deliver 12 (-3/+10%) m3/hr at Total Head =200m. * Motor Power Shall not less than: 1.15 of pump power. | | **Set** | **1** |
| **2** | **Submersible pumps and Heavy-duty submersible Motor, under the following conditions:**  **Wells #: 17 & 18 at Al-Jazaa)**   * Pump efficiency > 70% at duty point, driven by a heavy-duty submersible motor three phase induction, suitable for VFD starting. * The pump has to deliver 21 (-3/+10%) m3/hr at Total Head =200m.   Motor Power Shall not less than: 1.15 of pump power. | | **No.** | **2** |
| **3** | **Solar Pumping Inverter Controller, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Power: should be not less than 1.2 of motor power. | | **No.** | **3** |
| **4** | **Output Reactor, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Rated Operating Voltage: 380V~1140V 50Hz * Rated power: should be not less than 1.2 of motor power. | | **No.** | **3** |
| **5** | **PV Combiner Box, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Not less than 8 inputs, 1 output DC Combiner Box. * The DCCB to be provided for termination of connecting cables. | | **No.** | **3** |
| **6** | **AC Control Box, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Enclosure class should be not less than IP65, waterproof and anti-dust. * All wires/cables must be terminated through cable lugs. | | **No.** | **3** |
| **7** | **Molded Case Circuit Breaker (MCCB), under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * MCCB Protection Type: Thermal Magnetic Based * MCCB Current Rating: 100A * MCCB Poles: 4 POLE * MCCB Breaking Capacity: 25kA * Rated Operational Voltage: 690 V AC, 500 V DC | | **No.** | **3** |
| **8** | **Submersible Level Transmitter (Water level Sensor), under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Measuring range: 1m-500m * Shell protection: IP69 * Accuracy: 0.25% F.S * Material: SS 304 probe, rubber wire. | | **No.** | **3** |
| **9** | **Pressure Switches, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Setting range: 2 – 20 bar. * Electrical rating: 12 A, 400 V * Differential: Adjustable * Degree of enclosure: IP43 or IP55 | | **No.** | **3** |
| **10** | **Submersible Cable, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Voltage rating:450/750VAC. * Type of Conductor: copper, flexible, finely, multi stranded. * Insulation: black poly chloroprene, HO7RN -F or equivalent material.   **The size and quantity of cables as:** | | | |
| 10.1 | Submersible Cable Size: 3 cores × 35 mm2 | **M** | **360** |
| 10.2 | Submersible Cable Size: 3 cores × 1.5 mm2 (for Level Sensor) | **M** | **360** |
| 10.3 | Cable Size: 2 cores × 1.5 mm2 (for Pressure Switch) | **M** | **60** |
| **11** | **Power Cable Splice Kit, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Conductor Amount: Multiple, Single * Dielectric Strength: 500 mV * Insulation Outside Diameter Range: 10 - 16 mm, 10 - 19 mm, 16 - 25 mm, 25 - 40 mm * Maximum Cable Outside Diameter: 15.2 mm, 25.4 mm, 39.7 mm * Maximum Conductor Size: 18.5 mm², 35 mm², 95 mm² * Maximum Insulation Outer Diameter: 15.875 mm, 25.4 mm, 39.688 mm * Minimum Conductor Size: 10 mm², 18.5 mm², 35 mm² * Minimum Insulation Outer Diameter: 10.312 mm, 15.875 mm, 25.4 mm | | **Kit.** | **12** |
| **12** | **Heat Shrink Tubing Kits, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Dielectric Strength: 900 mV * Voltage: 600 V * Maximum Operating Temperature: 135 ℃ * Length of each piece: Not less than 150mm * Kit Includes 102 pieces: (with the following sizes)   ·        Size 3/16" (4,8 mm), No. of Pieces 30  ·        Size 1/4" (6,4 mm), No. of Pieces 28  ·        Size 3/8" (9,6 mm), No. of Pieces 20  ·        Size 1/2" (12,7 mm), No. of Pieces 14  ·        Size 3/4" (19,1 mm), No. of Pieces 6  ·        Size 1" (25,4 mm), No. of Pieces 4 | | **Kit.** | **6** |
| **13** | **Riser Pipe (uPVC Super Heavy), with All Accessories Required**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * PIPE (OD): OD – 88mm (3”), ND:80mm * Pipe Wall Thickness: As specified in the table for Super Heavy class. * Pipe Joint System: Square Type Threads with Coupler, rubber ring and Safety lock * Pipe Length: 3m * Working pressure: 35 Bar | | **No.** | **120** |
| **14** | **Stainless-Steel 304 Vertical Check Valve, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Nominal Diameter (DN): 80mm * Connection Type: According to the raiser pipes. * Nominal Pressure (PN): PN25 | | **No.** | **3** |
| **15** | **Well Cap / Cover, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Diameter: 14” * Min. thickness: 18 mm | | **No.** | **3** |
| **16** | **Pipe Ha+B192ngers & Supports, under the following conditions:**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Hangers Diameter: for pipes of 3” dia. * Min. thickness: 18 mm * Length: more than 14” | | **No.** | **9** |
| **17** | **Bulk Water Meters, under the following conditions**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Type: Horizontal (vertical where specified) helix type with completely waterproof encased gear train, magnetic transmission and registration, shielded against tampering or any external magnetic field. * Sizes: Ø 3’’ (80mm) | | **No.** | **3** |
| **18** | **Double Flange Gate Valve, under the following conditions**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Diameter: 3” (80mm) * O-ring & gasket: EPDM * Working Pressure: 16 bars * Body cover: Ductile Iron GGG 40 | | **No.** | **3** |
| **19** | **Double Flange Non-Return Valve, under the following conditions**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Diameter: 3” (80mm) * O-ring & gasket: EPDM * Working Pressure: 16 bars * Body cover: Ductile Iron GGG 40 * Flange: B.S.4504 (PN16) | | **No.** | **3** |
| **20** | **Pressure Gauge, under the following conditions**  **(Wells #: 15,17 & 18 at Al-Jazaa)**   * Material of Gauge Case: AISI 304 stainless steel fitted with laminated * Gauge Diameter: 100mm * Inner Scale: from 0 to 25 Bar * Bottom Connection: ½ * All accessories | | **No.** | **3** |
| **21** | **Single Small Orifice Air Valve, under the following conditions**   * Design: Fully compliant to BS EN 1074-4 * Maximum operating temperature: 90°C * Diameter Bottom Connection (female): 1” * Nominal Pressure (PN): PN16 * Minimum operating pressure: 0.3 bar * All accessories | | **No.** | **3** |

**SCOPE OF WORK**

Supply, delivery and Test of 3 Submersible pumps units (bowel assembly, Motors, Cables, Control panels, etc.) complete with all required connections, gaskets, bolts and accessories, to be delivered to National Water & Sanitation Authority – Al Ghaydah Branch- NWSA- AL-GHAYDAH’s Warehouses, Al Ghaydah District - Al Maharah Governorate, for the purpose of maintaining submersible pumping units for a number of water wells in **Al-Jazaa** water well field

1. **GENERAL**
2. The goods to be supplied must be new and unused.
3. Delivery and Test of supplied goods of supplied goods will be made for National Water & Sanitation Authority – Al Ghaydah Branch (NWSA-AL GHAYDAH) - NWSA- AL-GHAYDAH’s Warehouses, Al Ghaydah District - Al Maharah Governorate
4. The material to be supplied shall be new, unused and of the latest design (refurbished, used Material or the stock for more than 3 years will not be considered)
5. Documentary evidence to prove that the material offered comply with the Technical Specifications given in (Section II and Section III Form C) must be provided.
6. The supplied goods and materials shall conform to the authoritative standards appropriate to the Goods country of origin. Such standards shall be the latest issued by the institution concerned.
7. Technical Data/Brochures: bidders Must provide relevant technical data detailing the technical data of the material and original manufacturer brochures, where there is more than one model on a brochure, the bidder, must highlight which they are quoting for in this tender.
8. All materials shall be complying with specified International Standards and shall be supplied from reputable and approved manufactures and country of origin.
9. Markings: Unless otherwise specified in the relevant standard, products are to have the following legible marks as appropriate, cast, stamped or indelibly painted:

- Manufacturer’s name, initials and identification mark.

- Class designation.

- Date of manufacture.

- Initials and number of relevant standards.

1. Transport, handle and store all products and materials in accordance with the manufacturer’s recommendations and in a manner that prevents damage or deterioration or excessive distortion.
2. The employer UNOPS, UWSSP / NWSA- Al Ghaydah Branch shall have the right to reject any damaged or defective product material.
3. **Warranty & training,**

* Recommended Preventive Maintenance Schedule for the equipment shall be included.
* Final test and Inspection of supplied goods shall be carried out including: (Visual Inspection, Load test, testing, Material test certificate, field testing, etc) shall be done in the destination place (Al Ghaydah city/ Al-Mahara Government).
* One-year warranty for the whole unit. Warranty must be approved from the Bidder and the Manufacturer.
* Warranty of after sell service support for the unit shall be available through authorized services centre in the Yemen.

1. **Climate:**

* All materials and equipment incorporated in the work shall be capable of withstanding shade temperatures of 45°C and if exposed to direct sunlight shall be capable of withstanding the additional heat gain up to 70°C , approx. 90% humidity and attitude 300 m above sea level. All materials and equipment shall take into account the generally tropical conditions with occasional dust storms, intense rain storms.

1. **Markings:**

Unless otherwise specified in the relevant standard, products are to have the following legible marks as appropriate, cast, stamped or indelibly painted:

* Manufacturer’s name, initials and identification mark.
* Class designation.
* Date of manufacture.
* Initials and number of relevant standards.

**Technical specifications:**

**1- Submersible Pumps:**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | Submersible pump Mixed flow multi -stage separate type, AC 3PH motor type, the motor pump Sets should be used for the solar PV, starting compatible with AC VFD operation, bidders shall indicate manufacture, country of origin and model. |
| **2** | Brand | New |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Capacity (L/S) | As BoQ |
| **6** | Heads (m) | As BoQ |
| **7** | Pump max. dia. (Inch) | Less than 8’’ |
| **8** | Clearance | Well dia. **-** pump max dia. with cable **=** not less than 40 mm |
| **9** | Pump efficiency at duty point (%) | ≥ 70% |
| **10** | **Materials** |  |
|  | Casing/ Impeller/ Diffuser/ Check valve / Strainer / Screw, nut | AISI 304 or higher specification materials |
|  | (Shaft complete) | Duplex Stainless Steel |
|  | Elastomers Such as Wear Ring Seat O-Ring Bearing Bush | Thermoplastic (PPO /NBR) |
| **11** | Discharge size (Inch) | 3-4 |
| **12** | Installation type | vertical |
| **13** | Coupling (Connection): according to | NEMA |

**2- Submersible motor:**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | The motors shall be Rewindable, insulation rating is compatible with AC VFD operation |
| **2** | Brand | New |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Rate Power KW | at least 1.15 greater than pump power |
| **6** | Application | Rewindable |
| **7** | Overall Diameter (Inches) | As BoQ |
| **8** | Rated Speed (R.P.M ) | 1800 – 3000 |
| **9** | Rated voltage (V) | 3 x 380 - 415 |
| **10** | Voltage tolerance (%) | ± 10 |
| **11** | Frequency | 50Hz |
| **12** | No. Of Starts Per Hours | > 10 |
| **13** | Ambient Water Temperature | 45 °C |
| **14** | Minimum Flow (m/s) / Ambient Temperature 50 °C | 0.15 – 2 |
| **15** | Winding Insulation | PE2+PA |
| **16** | Motor Connection | NEMA |
| **17** | Protection Class: IP68. | IP68 |
| **18** | Motor efficiency ( % ) | More than or Equal to 80 % |
| **19** | **Materials:** |  |
|  | Motor sleeve | AISI 304 or higher specification materials. |
|  | Motor housing Bolts, nuts, washers, etc. | AISI 304 or higher specification materials. |
|  | (Shaft complete) | Duplex Stainless Steel |
|  | Bottom motor body, Top head motor | Cast Iron or superior |
|  | Elastomers Such as Wear Ring Seat O-Ring Bearing Bush | Thermoplastic (PPO /NBR) |
|  | Thrust bearing | Ceramic/ carbon |
| **20** | Filling cooling liquid | Water |
| **21** | Motor cable | 5-6 Meters Long, Approved KTW, ACS, WRAS, |
| **22** | Cable connection | Entry Or Gland |

**3- SOLAR PUMPING INVERTER CONTROLLER:**

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Phases: | Three phase output |
| **6** | Voltage Range: | 380-420 V |
| **7** | Efficiency: | Not less than 95% |
| **8** | Output Frequency: | 0-50 0Hz |
| **9** | Enclosure class: | not less than IP65 |
| **10** | Maximum input voltage (Voc): | not less than 900 VDC |
| **11** | MPPT + VFD (Variable Frequency drive) | Built-In |
| **12** | System design | should be designed to run near its MPPT range |
| **13** | Operating temperature: | up to 50 °C |
| **14** | Data Loggers | Built-In |
| **15** | Power Sources | The device shall allow hybrid operation with external power source, where solar power should be configured as the primary power source. External power source and solar power could be operated in the same time. |
| **16** | Types Work Modes | Solar Pumping inverter should have the ability to work in different modes like Soft Starter, V/F Speed Control, Auto/ Manual Speed Control during solar radiation changes and Auto wake up after hibernation time in cloudy day |
| **17** | Programmable Inputs | Solar Pumping Inverter should be equipped with Programmable inputs to be used for Discharge pressure switch to protect the pump against high discharge pressure, well water level sensor to protect pump against dry running, Tank level switch for overflow protection and closed pipeline (high pressure). |
| **18** | Communication Connection | Solar Pumping inverter should be equipped with programmable outputs to be programmed for any required actions |
| **19** | Display | LCD Screen display with Cover + LED status indicator |
| **20** | Display content | PV status (Current, Voltage, Power, Energy), AC input voltage, AC output voltage, Load, Running Status, RPM, and Frequency |
| **21** | Protection | Over-Voltage, pump Over-Current, pump Over-Load, Over-Temperature, pump Phase Loss, pump Short-Circuit, ground fault, solar low power, DC Input Anti-reverse, AC output unbalance (3Phase); |

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|  |
| --- |
| **4- OUTPUT REACTOR**  **Description**  **The AC reactor for inverter is installed next to the inverter between the inverter and water pump. The drive reactor can smooth filter, reduce motor noise and help prolong the life of the water pump; reduce the leakage current caused by the output higher harmonic, and protect the power switch devices in the inverter. A VFD reactor can also ensure steadier operation and higher efficiency of the water pump** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **#** | TECHNICAL ITEMS | SPECIFICATIONS |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Rated Operating Voltage | 380V~1140V 50Hz. |
| **5** | Rated power | should be not less than 1.2 of motor power. |
| **6** | Operating Frequency | 50 Hz |
| **7** | Operation Ambient Temperature | -25℃~50℃ |
| **8** | Insulation Resistance | Core-winging, DC 1000V, resistance≥100M ohm |
| **9** | Inverter reactor's noise: | ＜80dB (to be measured at the point 1 meter away from the reactor horizontally) |
| **10** | Protection class: | IP20 |

**5- PV COMBINER BOX (DCCB)**

**Description**

The PV combiner box shall be used to combine the multiple DC input to one output, and it shall comply with the following specifications as minimum.

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Enclosure materials | Coated metal with lockable door. |
| **5** | Enclosure protection | IP65. |
| **6** | Number of input circuit | Total number of strings in addition to 2 spare inputs. |
| **7** | DC fuse rating for each string | 1000V, 20 A. |
| **8** | DC output circuit | In accordance with the maximum current X 1.25, 1000 VDC breaker |
| **9** | Surge Protection Device | Built in |
| **10** | Monitoring Unit for each string | Shall be provided. |
| **11** | Diodes Type | Anti-backflow diodes |
| **12** | Operational Environment Temperature | -30 °C ~+70 °C. |
| **13** | Enclosure materials | Coated metal with lockable door. |

**6- AC CONTROL BOX**

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Enclosure class | not less than IP65 |
| **5** | All wires/cables | must be terminated through cable lugs |
| **6** | All required wires/cables and busbars | must be included, |
| **7** | Reverse Protection Diode; | Built in |
| **8** | AC & DC circuit breakers | Built in |
| **9** | Surge Protection Device; | Built in |
| **10** | Forced Air Cooling type via fans; | Forced Air Cooling type via fans |
| **11** | The VFD & Output reactor | must be located in |
| **12** | Enclosure class | not less than IP65 |
| **13** | All wires/cables | must be terminated through cable lugs |

**7- MOLDED CASE CIRCUIT BREAKER (MCCB)**

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | MCCB Protection Type | Thermal Magnetic Based |
| **5** | MCCB Current Rating | 100A |
| **6** | MCCB Poles | 4 POLE |
| **7** | MCCB Breaking Capacity | 25kA |
| **8** | Rated Operational Voltage | 690 V AC  500 V DC |
| **9** | Include NEMA 3R enclosure | * Powder-coated steel construction * Lockable front door, wall mounted type, Direct handles, Locking devices, Auxiliary contacts and Protective plates. * ways at least, shock and vibration proof contacts. * Conform to BS EN 60947-3 and UL 1008 Listed. |

**8- SUBMERSIBLE LEVEL TRANSMITTER (Water level Sensor)**

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Measuring range | 1m-500m |
| **5** | Shell protection | IP68 |
| **6** | Working temperature | -20~60℃ |
| **7** | Accuracy | 0.25%F.S |
| **8** | Material | SS 304 probe, rubber wire |

**9- PRESSURE SWITCHES**

|  |  |  |
| --- | --- | --- |
| **#** | **TECHNICAL ITEMS** | **SPECIFICATIONS** |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Used for | Water pumps |
| **5** | Setting range | 2 – 20 bar |
| **6** | Contact system | TPST and SPST |
| **7** | Electrical rating | 12 A, 400 V |
| **8** | Electrical connection | Screw terminals |
| **9** | Contact material | Silver |
| **10** | Differential | Adjustable |
| **11** | Degree of enclosure | IP43 or IP55 |
| **12** | Design | Box |

**10- SUBMERSIBLE CABLE**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| 1 | Types | Flexible rubber cable |
| 2 | Brand | \_\_\_\_\_\_\_\_\_ |
| 3 | Manufacturing Year | 2024 |
| 4 | Origin |  |
| 5 | Size | As BoQ |
| 6 | Type of Conductor | Copper, Flexible, Finely Multi Stranded |
| 7 | Conductor construction | class 5 IEC 60228 |
| 8 | Insulation | Black Poly Chloroprene, HO7RN -F or Equivalent Material. |
| 9 | Cores identification | According to HD 308 |
| 10 | Nom. rated voltage U0 / Uv -kV | 450/750 - 0,6/1 |
| 11 | Test voltage kV | 2,5 - 4 |
| 12 | Max AC voltage V -kV | 520/900 - 0,7/1,2 |
| 13 | Max. short circuit temp. °C | 250 |
| 14 | Max. working temp. on the conductor °C | 90 |
| 15 | Max water temperature °C | More than 45 |

**11- POWER CABLE SPLICE KIT**

**Applications:**

Designed for use in weather-exposed or direct-burial locations. For making inline (straight) splices on unshielded, synthetic insulated cables rated up to a maximum of 5kV and for multiple conductor cables rated up to a maximum of 1kV. UL Listed for direct burial and submerged applications up to 600 volts and 90°C. For use with UL Listed connectors only.

|  |  |  |
| --- | --- | --- |
| **NO.** | **ITEM** | **SPECIFICATIONS** |
| **1** | Types | Power Cable Splice Kit |
| **2** | Brand | 3M |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Cable Shielding | Multiple Conductor Portable Cable, Single Conductor Portable Cable |
| **6** | Conductor Amount | Multiple, Single |
| **7** | Dielectric Strength | 500 mV |
| **8** | Insulation Outside Diameter Range | 10 - 16 mm, 10 - 19 mm, 16 - 25 mm, 25 - 40 mm |
| **9** | Material | Epoxy |
| **10** | Maximum Cable Outside Diameter | 15.2 mm, 25.4 mm, 39.7 mm |
| **11** | Maximum Conductor Size | 18.5 mm², 35 mm², 95 mm² |
| **12** | Maximum Insulation Outer Diameter | 15.875 mm, 25.4 mm, 39.688 mm |
| **13** | Minimum Conductor Size | 10 mm², 18.5 mm², 35 mm² |
| **14** | Minimum Insulation Outer Diameter | 10.312 mm, 15.875 mm, 25.4 mm |
| **15** | Product Color | Black |
| **16** | Product Type | Splice |
| **17** | Splice Type | Inline |
| **18** | Voltage | 5 kV |
| **19** | Voltage Application | Medium Voltage |
| **20** | Kit Contents: | * Mold Body * Pouring Spouts * Electrical Tape * Resin |

**12- HEAT SHRINK TUBING KITS**

**Applications:**

Heat Shrink Products provide an effective means of applying skintight insulating and protective coverings for a wide variety of electrical, electronic and mechanical applications.

The flexibility and low shrink temperature tubing make it ideal for shrink-fit jacketing and insulation of flexible wire bundles and sensitive ­components.

|  |  |  |
| --- | --- | --- |
| **NO.** | **ITEM** | **SPECIFICATIONS** |
| **1** | Types | Heat Shrink Tubing Kits |
| **2** | Brand | 3M |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Material | Flexible Polyolefin |
| **6** | Colour | Black |
| **7** | Dielectric Strength | 900 mV |
| **8** | Voltage | 600 V |
| **9** | Maximum Operating Temperature | 135 ℃ |
| **10** | Minimum Shrink Temperature | 100 ℃ |
| **11** | Shrink Ratio | 2:1 |
| **12** | Length of each piece | Not less than 150mm |
| **13** | Kit Includes 102 pieces:  (with the following sizes) |  |
|  | **Size** | * 30 of size 3/16" (4,8 mm) * 28 of size 1/4" (6,4 mm) * 20 of size 3/8" (9,6 mm) * 14 of size 1/2" (12,7 mm) * 6 of size 3/4" (19,1 mm) * 4 of size 1" (25,4 mm) |

**13- RISER PIPE (uPVC Column Raiser Pipes)**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | uPVC Column/Riser/Drop Pipes |
| **2** | Brand | New |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Type of Pipe Joint System | Square Type Threads with Coupler, rubber ring and Safety lock |
| **6** | Class | Super Heavy |
| **7** | Working Pressure | Not less than 35 Bar |
| **8** | Nominal Length | 3m |
| **9** | Outside Dia. | As BoQ |
| **10** | Accessories | Top and Bottom Adaptors / Connectors set, Lowering Fixture and Pump Guard set |
| **11** | **Markings** | * Manufacturer’s name and/or identification mark * Nominal Diameter (DN) * Nominal Pressure (PN) * Class Ranking * Pipe Thickness * Pipe Length |

**14- STAINLESS STEEL VERTICAL CHECK VALVE**

**Description**

Check valves, also referred to as non-return valves, are used to allow flow in one direction and prevent the flow in the opposite direction. There are many benefits to using check valves, they provide pressure relief for system safety, prevent contamination from reverse flow and prevent equipment upstream from backflow damage.

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | Stainless-Steel Vertical Check Valves |
| **2** | Brand | \_\_\_\_\_\_ |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Nominal Diameter (DN) | Shall be selected according to raiser line diameter |
| **6** | Connection Type | According to the raiser pipes. |
| **7** | Nominal Pressure (PN) | Shall be more than TDH of the system |
| **8** | **Material** |  |
|  | * Body Material: | 304 Stainless Steel |
| * Spring Material: | 304 Stainless Steel |
| * Valve Core: | 304 Stainless Steel |
| * End Seal: | PTFE |
| **9** | Flow | Uni-Directional |
|  | Temp Range | -4 to 356° F / -20 to 180°C |
| **10** | **Markings** | * Flow direction arrow * Manufacturer’s name and/or identification mark * Nominal Diameter (DN) * Nominal Pressure (PN) |

**15- WELL CAP / COVER**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | WELL CAP / Cover |
| **2** | Brand | \_\_\_\_\_\_ |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Diameter | Shall be more than well diameter |
| **6** | Min. thickness | 18 mm for borehole wells caps |
| **7** | Material | made from A36 or equivalent CS plate |
| **8** | Paint type | Painted by Anti-corrosion Paint at least two coats (premier and finishing layer) |
| **9** | **Other requirements** | * Fabricated with stiffeners and holes for pump and sensor cables * Stiffeners shall be holed for lifting purposes |

**16- PIPE HANGERS & SUPPORTS**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| **1** | Types | Pipe Hangers & Supports  (Heavy Duty Riser Clamp) |
| **2** | Brand | \_\_\_\_\_\_ |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Length | Shall be more than well diameter |
| **6** | Min. thickness | Not less than 18 mm |
| **7** | Material | made from A36 or equivalent CS plate |
| **8** | Paint type | Hot-Dip Galvanized (50HHDG) |
| **9** | Bolt, nuts and washers | Stainless Steel Grade A2/304. |

**17- BULK WATER METERS:**

**Description**

Water meters to be supplied are to be suitable for measuring water flow in closed conduits to domestic consumers. They must give continuous hustle-free service and long working life under rigorous climatic condition prevailing, ambient temperature up to 50 oC is very common during summer months, Humidity also undergoes sharp changes with 80% humidity a common phenomenon. Violent sandstorms are a common feature and fine dust is carried in suspension in the atmosphere.

Water meters should include all accessories need for connection (connectors, nut, gasket etc.).

All offers must be accompanied by complete technical specifications, catalogues, all in English for the meters offered.

| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| --- | --- | --- |
| **1** | Types | Woltmann water meter designed for measuring bulk flows of cold potable water |
| **2** | Brand | \_\_\_\_\_\_ |
| **3** | Manufacturing Year | 2024 |
| **4** | Origin |  |
| **5** | Positions of Installation | Suitable for all positions (Horizontal, Vertical, Inclined) |
| **6** | Flanges drilled | accordance to DIN 2532/3 PN 16 |
| **7** | Degree of protected | IP68 protected dry type mechanism |
| **8** | Examination Certificate | Approved in accordance with the Directive 2014/32/EU or (MID) |
| **9** | Working temperature | not less than 50oC. |
| **10** | Maximum working pressure | 16 bar |
| **11** | Sizes | As BoQ |
| **12** | Material |  |
| **13** | * Body | GG25 cast iron and shall be coated with a high-quality fusion bonded powder coating inside and outside the meter body, which will not render the water passing through it unfit for human consumption |
| **14** | * Top Glass | Shall be made of glass material, thick & tempered type to resist breakage, scratching & abrasion |
| **15** | * Counter Box Cover | The meters shall have a metallic lid hinged to the counter box cover to prevent accumulation of dust and foreign matter on the countertop glass |
| **16** | * Internal Rotary Components | shall be of thermoplastic, non-tainting and which inhibit any scale formation. The stainless-steel parts shall be of high grade. |
| **17** | Totalizer Register | a. It shall be straight reading type.  b. The Totalizer shall register in cubic meter units.  c. The Totalizer shall be set at 0 (zero).  d. The Totalizer shall reset to 0 (zero) at 100,000 m3.  e. The Totalizer shall consist of an arrow of a minimum of six on-line consecutive digits to read at least 999,999 m3. |
| **18** | Metrological Characteristics |  |
| **19** | * 80mm Water flow Meter | * Q3 / Q1 ≤160 * Q4 Overload Flow = 78.75 m3/h * Q3 Nominal Flow = 63 m3/h * Q2 Transitional Flow = 0.63 m3/h * Q1 Minimum Flow= 0.393 m3/h |
| **20** | * 100mm Water flow Meter | * Q3 / Q1 ≤160 * Q4 Overload Flow = 125 m3/h * Q3 Nominal Flow = 100 m3/h * Q2 Transitional Flow = 1.00 m3/h * Q1 Minimum Flow= 0.625 m3/h |
| **21** | * 150mm Water flow Meter | * Q3 / Q1 ≤160 * Q4 Overload Flow = 312.5 m3/h * Q3 Nominal Flow = 250 m3/h * Q2 Transitional Flow = 2.50 m3/h * Q1 Minimum Flow= 1.562 m3/h |
| **22** | Meter markings | The water meter shall be marked with the following identifications:  a. Direction of the water flow with an arrow indicating the direction.  b. Trademark and name of manufacture.  c. The metrological class and on rate in m3 per hour  d. Manufacturer's serial number of the water meter permanently affixed to the water meter case |

**18- DOUBLE FLANGE GATE VALVE**

| **S.N.** | **DESCRIPTIONS** | **SPECIFICATIONS** |
| --- | --- | --- |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Design | According To BS-5163 or other equivalent |
| **5** | Diameter | As BoQ |
| **6** | Application: | for water works. |
| **7** | Face To face dimension | According to BS 5163 |
| **8** | Flange | According to BS 4504 or ISO 2531 or other equivalent. |
| **9** | O-ring & gasket | EPDM |
| **10** | Working Pressure | 16 bars |
| **11** | Wedge | Ductile Iron GGG 40 with central guides to avoid rubber friction when operating the valve fully internally and externally coated with EPDM |
| **12** | Body cover | Ductile Iron GGG 40 |
| **13** | Stem (spindle) | Stainless steel grade A2/304. |
| **14** | Stem ( Nut ) | Bronze |
| **15** | Temperature | 60°C - 70° C |
| **16** | Accessories | The values provided completed with O-ring , Gasket , Bolt , nuts and washer stainless steel grade A2/304. |
| **17** | Coating | Epoxy (inside & outside 200-300 micron ) |
| **18** | Accessories | The values provided completed with O-ring , Gasket , Bolt , nuts and washer stainless steel grade A2/304. |

**19- DOUBLE FLANGE NON-RETURN VALVE**

|  |  |  |
| --- | --- | --- |
| **NO.** | **ITEM** | **SPECIFICATIONS** |
| **1** | Brand |  |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | **Design** | **According To B.S. 5153 or other equivalent** |
| **5** | Diameter | 4” (100mm) |
| **6** | O-ring & gasket | EPDM |
| **7** | Working Pressure | 16 bars |
| **8** | Body cover | Ductile Iron GGG 40 |
| **9** | Flange | B.S.4504 (PN16) |
| **10** | Max. Service Temp. | 60°C - 70° C |
| **11** | Accessories | The values provided completed with O-ring , Gasket , Bolt , nuts and washer stainless steel grade A2/304. |

**20- PRESSURE GAUGE**

| **NO.** | **ITEM** | **SPECIFICATIONS** |
| --- | --- | --- |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Material of Gauge Case | AISI 304 stainless steel fitted with laminated  safety glass |
| **5** | Gauge Diameter | 100mm |
| **6** | Inner Scale | From 0 to 25 Bar |
| **7** | Bottom Connection | ½ “ |
| **8** | Accessories | Isolation Stainless steel 1/2-inch Ball valve of the same pressure rating.  In addition to the connection fittings (nipples, sockets, reducers, etc.) |

**21- SINGLE SMALL ORIFICE AIR VALVE**

| **NO.** | **ITEM** | **SPECIFICATIONS** |
| --- | --- | --- |
| **1** | Brand | \_\_\_\_\_\_\_\_ |
| **2** | Manufacturing Year | 2024 |
| **3** | Origin |  |
| **4** | Design | Fully compliant to BS EN 1074-4 |
| **5** | Maximum operating temperature | 90°C |
| **6** | Diameter | 1” |
| **7** | Nominal Pressure (PN) | PN16 |
| **8** | Minimum operating pressure | 0.3 bar |
| **9** | Materials |  |
| * Body | Ductile iron GS 400-15 |
| * Cover | Ductile iron GS 400-15 |
| * Bolt | Stainless steel Gr. A2-70 |
| * Washer | Stainless steel Gr. A2-70 |
| * Float | ABS |
| * Nozzle | ABS |
| * Cap | ABS |
| * Gasket | EPDM 55 |
| * ‘O’ ring | EPDM 55 |
| * Adjusting screw | Stainless steel Gr. A2-70 |
| * Pin | Stainless steel |
| * Vent valve | Brass |
| **10** | Accessories | * Female threaded inlet as standard * Ball valve isolating valve * Ball valve isolating valve and flange * Inlet flange * Male threaded inlet |

**Delivery requirements and Comparative Data Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **UNOPS Requirements** | | **Is quotation compliant? Bidder to complete** | **Details**  **Bidder to complete** |
| **Delivery time** | The Bidder shall deliver the goods within **6 months** after the Contract signature. | ☐ Yes ☐ No | Insert details |
| **Delivery place and Incoterms rules** | **DAP as per Incoterms 2020 at National Water & Sanitation Authority – Al Ghaydah Branch - NWSA- AL-GHAYDAH’s Warehouses, Al Ghaydah District - Al Maharah Governorate.** | **☐ Yes ☐ No** | **Insert details** |
| **UNOPS Right to vary requirements** | At the time the Contract is awarded, UNOPS reserves the right to vary the quantity of the goods and associated services specified above, provided this does not exceed +/- [20%] , without any change in the unit prices or other terms and conditions of the RFQ. | ☐ Yes ☐ No | Insert details of goods offered, including specifications, picture, and brand/model offered if applicable |