**Section III: Schedule of Requirements:**

**RFQ title:**

**Supply, Delivery, and Test New Water *Submersible Motors Units* With All Accessories to be delivered to Taiz Water and Sanitation Local Corporations Warehouses – TAIZ CITY, Yemen.**

**Technical specifications for Goods and Comparative Data Table:**

# Scope :

* The Scope Shall Consist of Supply and Delivery , inspect , and test New water deep-well Submersible pump-motor assembly sets with all accessories as the below table and as specified in technical specifications ,BoQs and the other tender documents to warehouses of Water and Sanitation Local Corporations (WSLC) in destination cities as the below table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LOT-2 Supply, Delivery, and Test New Water *Submersible Motors Units* With All Accessories to be delivered to Taiz Water and Sanitation Local Corporations Warehouses – TAIZ CITY, Yemen.** | | | | | |
| **LOT#** | **Bill item#** | **Destination City** | **Description** | **Unit** | **QTY** |
| **LOT-002** | **Bill#11-B--1** | **TAIZ CITY** | **6" Submersible Motors (Power) (KW) = 18.5 kw** | **No** | **3** |
| **Bill#11-B--2** | **TAIZ CITY** | **6" Submersible Motors (Power) (KW) = 22 KW** | **No** | **4** |
| **Bill#11-B--3** | **TAIZ CITY** | **6'' Submersible Motors (Power) (KW) = 26 kw** | **No** | **4** |
| **Bill#11-B--4** | **TAIZ CITY** | **6'' Submersible Motors (Power) (KW) = 30 KW** | **No** | **3** |
| **Bill#11-B--5** | **TAIZ CITY** | **6'' Submersible Motors (Power) (KW) = 37 KW** | **No** | **4** |

# GENERAL

1. **Delivery and unloading:** To warehouses of Local water and sanitation corporations-in specified destination cities as mentioned in the scope above.
2. **Technical Documents and Certificates:** Documentary evidence to prove that the material and design is according to specifications.
3. **Standards**: All goods shall comply with the requirements of the latest issue (with up to date amendments) of the appropriate standard or standards of the American Society for Testing of Material (ASTM) British Standards Institution (BS) or International Organisation for Standardisation (ISO) standards, German Standards (DIN) or their equivalents as approved by the Purchaser. Once the Bid has been accepted and a Contract awarded, the successful Bidder shall furnish two (2) original copies of the standards with which the goods are complying in English. If the original standards are in a language other than English, then authenticated English translations must be submitted in addition. Where reference is made to a particular manufacturer's product, such reference shall be taken only as an indication of design and quality unless otherwise stated.
4. **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 50°C , approx. 90% humidity and altitude up to 100 - 1700 m above sea level. All materials and equipment shall take into account the generally tropical conditions with occasional dust storms, intense rain storms.
5. **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. **Warranty:** The supplier shall provide manufacturer’s warranty to the employer/UNOPs that the Goods Supplied under the contract will comply strictly with the Contract and shall be first class in every case and shall be free from defects. The supplier further warrants to the Purchaser that all materials, equipment and supplies furnished by the supplier for the purpose of the goods will be new, merchantable of the most suitable grade, and fit for their intended purposes. This warranty shall remain valid for a one-year period starting of the date of the final acceptance delivery. After the final acceptance, any part of the equipment which fails or does not give satisfactory performance during this period of warranty, shall be replaced within three months from the date the Supplier has been notified to do so.All expenses involved in this connection shall be borne by the supplier who should take this into consideration when bidding.
2. **Technical Data/Brochures:** bidders **Must** provide relevant technical data sheets and manufacturer catalogues for all supplied items.
3. **Manufacturing and Country of origin Certificate:** All materials shall comply with specified International Standards and shall be supplied from **reputable manufacturers.**
4. **Manufacturing and test Certificates:** The bidder shall submit a test certificate from the manufacturer certifying that all supplied items have been tested and that they have successfully passed the tests prescribed by the relative international standard specifications and test certificates for each item (according to serial number) shall be submitted for applicable items.
5. **Certification Standard:** All materials supplied shall be the best of their respective kinds and in accordance with the current and relevant Standards for those particular classes of material where such standards are applicable and do not conflict with this specification.
6. **Transportation and Storage:** 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.
7. **The employer (UNOPS) shall have the right to reject any damaged or defective product material.**
8. **Tests after Delivery:** The Employer (UNOPS) has the right to take samples of the supplied materials, and the following tests (or any other required tests) shall be carried out in accordance with the relevant international standards or regulations by an approved laboratory at own bidder cost.
   * Material type and equipment performance

# Technical Specifications

# SUBMERSIBLE PUMPING UNIT AND ITS ACCESSORIES

This specification covers the design, material, construction features, manufacture, inspection, testing the performance of water Submersible deep borehole /well Pump-motor complete assembles with all accessories.

| 1. Submersible Motor | | |
| --- | --- | --- |
| NO. | ITEM | SPECIFICATIONS |
|  | **General** | * The pump-motor units shall be new ,heavy duty and robust enough to operate under harsh conditions. All components should adhere to recognized international standards and be sourced from **reputable manufacturers like Franklin or equivalent.** * Complete heavy duty water deep-well submersible pump-motor set assembly with all accessories to deliver ground water of min. temperature 45 oC with amount of sand up to 100 100 g/m³. |
|  | **Application** | * Ground water deep wells * Water amount of sand up to 100 g/m³ * Water temperature up to 45 oC or as specified in form C.   At altitudes up to 2300 m a.s.l |
|  | **Starting type** | **The motor shall be suitable for all starting type specially VFD starting.** |
|  | **Power** | **The motor shall be with at least 15% rated output power above the maximum required power of the pump** |
|  | **Frame** | **Rewindable or encapsulated** |
|  | **Wire Insulation Material** | **- For rewindable motors: the insulation material shall be PE2/PA.**  **- For encapsulated Motors: the insulation material as standard.** |
|  | **Rated speed (R.P.M)** | **1800 - 3000** |
|  | **Voltage rating ( V )** | **380 - 415** |
|  | **Voltage tolerance** | **-10/+ 6 %** |
|  | **Phase** | **3** |
|  | **Frequency (Hz)** | **30 - 50** |
|  | **Motor efficiency at full load ( % )** | **>=82** |
|  | **PF** | **More or equal to 0.8** |
|  | **Motor winding insulation class** | **F or superior** |
|  | **IP** | **68** |
|  | **Ambient water temp. ( Co ) @ 0.3 - 0.5 m/s cooling water Flow velocity** | **For 6” Motor**  • Ambient temperature: 45°C @ cooling flow along the motor not more than 0.3m/s .  **For 8” Motor**  • Ambient temperature: 45°C @ cooling flow along the motor not more than 0.5m/s . |
|  | **Thrust bearing** | Kingsbury-type, water-lubricated, thrust bearing:  • Min.15.5 kN :for 6” Motor of power: up to 22KW.  • Min.26.5 kN :for 6”Motor of power: 26 - 37kW.  • Min.45 kN :for 8” Motor |
|  | **Service Factor** | **1.15** |
|  | **No. of starts per hours** | **>10** |
|  | **Flange standard** | **NEMA** |
|  | **Shaft extension/ stator shell/ Diaphragm cover/ Bolts , nuts , washers , etc.** | **Stainless Steel** |
|  | **Diaphragm** | **EPDM / NBR** |
|  | **Radial Bearing (Guide Bearing)** | **Graphite** |
|  | **Bottom motor body, Top head motor** | **Cast Iron /SS304/SS316 or as specified in Form C** |
|  | **Operation Rating** | **Continuous duty** |
|  | **Motor cable** | * **Copper motor cable (Double insulated flat cable) at least 4 meters long, streamline cable .** * **Field replaceable, factory installed over-molded lead for cable resilience** |
|  | **Other specifications** | * **Water filled heavy duty submersible motor with Sand Fighter sealing system.** * **Hermetically sealed windings is preferred** * **6” and 8” double flange NEMA mounting design** * **Sand slinger** * **Mechanical shaft seal (SIC/SIC).** * **Water lubricated heavy duty radial and axial**   **thrust bearings.**   * **Counter thrust bearing.** * **Low Motor Heat Rise** * **High efficiency electrical design (lower operating cost).** * **Built-in PT 100 temperature sensor.** * **NSF/ANSI 61 or equivalent Certified** * **Rotation counterclockwise facing shaft end (rotation reversible)** * **Motors installation orientation: Vertical/horizontal (shaft end heightened)** * **The submotor shall maintain a clearance of 40-60 mm with the inside diameter of the well casings (where applicable), otherwise it shall be equiped with fiber or ss cooling jackets.** |
|  | **Motor Tests** | **Motor shall be tested in accordance with NEMA and IEEE Procedures. The tests shall include,**  **a. Routine Tests**  **i. No load current**  **ii. Locked Rotor Current**  **iii. Winding Resistance**  **iv. High Potential Test.**  **b. Complete Tests**  **i. Rated Load Temperature Rise.**  **ii. Slip.**  **iii. Locked Rotor Torque.**  **iv. Breakdown Torque.**  **v. Efficiencies at 100, 75 and 50 percent of Full Load.**  **vi. Power factor at 100, 75 and 50 percent of Full Load. The supplier shall furnish the all-certified test results before shipment.** |

**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 ***Local water and sanitation corporations-Taiz City, Yemen.*** | ☐ 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 |