**Section II: Schedule of requirements**

1. **Summary of Requirements for the supply of Frequency converters and electric motors to Ukraine.**

**UNOPS requirements are comprised of the following 2 (two) lots:**

**Lot 1. Frequency converters including the below items:**

Item 1.1. Frequency converter, power 630 kW - 11 PCS

Item 1.2. Frequency converter, power 400 kW - 6 PCS

Item 1.3. Frequency converter, power 320 kW - 6 PCS

Item 1.4. Frequency converter, power 250 kW - 4 PCS

Item 1.5. Frequency converter, power 220 kW - 1 PCS

**Lot 2. Electric motors including the below items:**

Item 2.1 . Electric motor for hot blower fan, 160 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 100 mm, terminal box location - right - 1 PCS

Item 2.2 . Electric motor for hot blower fan, 160 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 100 mm, terminal box location - left – 1 PCS

Item 2.3. Electric motor for chimneys, 355 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 110 mm, terminal box location - right – 2 PCS

Item 2.4 . Electric motor for feed pump, 400 kW (+/- 10 %), 6 kV, 1500 rpm, shaft Ø 90 mm, terminal box location - right – 1 PCS

Item 2.5. Electric motor for motor-generator backup excitation, 150 kW (+/- 10 %), 6 kV, 1000 rpm, shaft Ø 90 mm, terminal box location - right – 1 PCS

Item 2.6. Electric motor for circulation pump. 400 kW (+/- 10 %), 6 kV, 1000 rpm, shaft Ø 110 mm, terminal box location - on the right – 1 PCS

**B. Technical specifications for Goods – Comparative Data Tables**

**Lot 1. Frequency converters**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant? Bidder to complete** | **Details of the offered goods. Bidder to complete** |
| --- | --- | --- | --- |
|  | **Frequency converters of various capacities according to the below requirements** | ☐ Yes ☐ No |  |
| **Item 1** | **Frequency converter, power 630 kW - 11 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 2** | **Frequency converter, power 400 kW - 6 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 3** | **Frequency converter, power 320 kW - 6 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 4** | **Frequency converter, power 250 kW - 4 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 5** | **Frequency converter, power 220 kW - 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **Materials, goods and equipment shall be supplied in accordance with applicable Ukrainian laws, regulations and rules, and shall comply with relevant European and international standards and be certified in accordance with the ISO 9001 system (Manufacturer must be ISO 9001 certified and must provide the certificate). In case of discrepancies between national and international standards, the standards with higher requirements shall apply. The equipment must be produced in compliance with the below standards (Bidder or producer of the equipment must provide a passport of the equipment confirming the compliance with the below standards):** | ☐ Yes ☐ No |  |
| 1.1.1 | DSTU EN IEC 61800-3:2019 Variable speed electric power drive systems. Part 3: Electromagnetic compatibility requirements and specific test methods (EN IEC 61800-3:2018, IDT; IEC 61800-3:2017, IDT) | ☐ Yes ☐ No |  |
| 1.1.2 | DSTU IEC 61800-4:2008 Power electric drive systems with adjustable speed. Part 4. General requirements and nominal technical characteristics of alternating current electric drives with a voltage from 1000 V to 35 kV inclusive (IEC 61800-4:2002, IDT) | ☐ Yes ☐ No |  |
| 1.1.3 | DSTU EN 61800-5-1:2015 Power electric drive systems with adjustable speed. Part 5-1. Requirements for electrical, thermal and energy safety (EN 61800-5-1:2007/A11:2021, IDT). Amendment No. 11:2022 | ☐ Yes ☐ No |  |
| 1.1.4 | DSTU IEC 60529:2019 Degrees of protection provided by enclosures (IP code) (IEC 60529:2013, IDT) | ☐ Yes ☐ No |  |
| 1.1.5 | IEEE 519-1992 - IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems | ☐ Yes ☐ No |  |
| 1.1.6 | DSTU EN 60076-1:2016 Power transformers. Part 1: General information (EN 60076-1:2011, IDT) | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must be in continuous business of supplying of the offered or equivalent equipment for at least past 3 years.** | ☐ Yes ☐ No |  |
| **1.3** | **The Bidder must have experience in the delivery of similar equipment in Ukraine or EU/EEA countries and must provide evidence (contracts, POs, certificates of completion, etc) of successful implementation of at least 2 contracts for supply of the offered or equivalent equipment realised in the past 3 years.** | ☐ Yes ☐ No |  |
| **1.4** | **The Bidder who is not the manufacturer of the Equipment, shall provide Manufacturer's Authorisation for supply of the Equipment confirming its rights to supply the said Equipment to Ukraine.** | ☐ Yes ☐ No |  |
| **1.5** | **Bidder or producer of the equipment must have a representative office in Ukraine that provides after sale service available in Ukraine or agreement with the local representative of the producer or service company that can provide maintenance and after sale services for the equipment. Bidder must provide contact details of the service centre (or list of the service centers) as well as confirmation from the service centre that it will provide after sale services for the proposed equipment.** | ☐ Yes ☐ No |  |
| **1.6** | **Warranty service. Within the warranty period, the Supplier or its authorized service centre shall provide maintenance and/or repair services and/or replacement of the equipment not later than 30 (thirty) calendar days from the date of receipt of written or E-mail notification from an authorized party. The name of the company, address, telephone- and fax numbers, e-mail address must be mentioned in the bid. All costs connected with warranty maintenance are covered by the Supplier.** | ☐ Yes ☐ No |  |
| **1.7** | **The warranty for the equipment must be min. 1 year. Warranty must include manufacturing defects and labour charges.** | ☐ Yes ☐ No |  |
| **1.8** | **In the production of the Equipment (cogeneration units) offered for this procurement, the use of materials and components included in the List of goods prohibited for importation into the customs territory of Ukraine originating from the russian federation, approved by the Resolution of the Cabinet of Ministers of Ukraine No.1147 dated December 30, 2015, is not allowed. The Bidder shall submit the relevant Declaration (confirming that the offered equipment is compliant with the above resolution).** | ☐ Yes ☐ No |  |
| **1.8** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.8.1 | Full scope of operating, maintenance and repair instructions for all the Goods supplied. The documentation should include, but not be limited to, the following: | ☐ Yes ☐ No |  |
| 1.8.1.1 | Frequency of necessary preventive maintenance during normal operation; | ☐ Yes ☐ No |  |
| 1.8.1.2 | Logs and operating instructions; | ☐ Yes ☐ No |  |
| 1.8.1.3 | Product information including: | ☐ Yes ☐ No |  |
| 1.8.1.3.1 | Name and address of the manufacturer; | ☐ Yes ☐ No |  |
| 1.8.1.3.2 | List of service centres in Ukraine; | ☐ Yes ☐ No |  |
| 1.8.1.3.3 | Type and model; | ☐ Yes ☐ No |  |
| 1.8.1.3.4 | Serial number; | ☐ Yes ☐ No |  |
| 1.8.1.3.5 | Duties and rates, where applicable. | ☐ Yes ☐ No |  |
| **1.9** | **Documentation that must be provided with the goods upon delivery.** |  |  |
| 1.9.1 | Two copies of the operating and maintenance manual in Ukrainian must be included with each piece of equipment including the below documents: |  |  |
| 1.9.1.1 | Operating instructions; | ☐ Yes ☐ No |  |
| 1.9.1.2 | Programming instructions; | ☐ Yes ☐ No |  |
| 1.9.1.3 | Manual for the operating personnel on duty (depending on the level of qualification) describing the methods of programming, monitoring the drive parameters and actions of the operating personnel in the event of an accident or emergency. | ☐ Yes ☐ No |  |
| 1.9.1.4 | Functional diagram of the frequency drive with the specification of electronics and power modules; | ☐ Yes ☐ No |  |
| 1.9.1.5 | Wiring diagram (display of elements) of the frequency converter boards and its individual blocks with indication of regulating elements, input and output connections | ☐ Yes ☐ No |  |
| 1.9.1.6 | Circuit diagrams of boards and drive units with element specifications. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of conformity for the proposed equipment; | ☐ Yes ☐ No |  |
| 1.9.3 | The necessary requirements for waste management and recycling of used materials should be specified in the manufacturer's documentation. | ☐ Yes ☐ No |  |
| 1.9.4 | Instructions for transporting and storing equipment and materials; | ☐ Yes ☐ No |  |
| 1.9.5 | All necessary manufacturer's certificates (technical certificates) and quality guarantees. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** |  |  |
| **2.1** | **Background. The actual daily consumption of hot water varies significantly. In order to exclude the possibility of electric motors operating in "idle mode" and, accordingly, to reduce electricity consumption, it is planned to equip the motors of pumping units of central heating stations (CHS) with pump control systems that include one control device with a frequency converter (FC) and are controlled by one control device with an industrial controller (IC).** | ☐ Yes ☐ No |  |
| **2.2** | **All goods must be new, unused and new or current models.** | ☐ Yes ☐ No |  |
| **2.3** | **The frequency converter should change the frequency of the electric current, which makes it possible to regulate the speed of induction motors by creating a voltage of the required frequency and amplitude at the output of the converter.** | ☐ Yes ☐ No |  |
| **2.4** | **Materials and goods produced abroad and imported into Ukraine must have a certificate of compliance with Ukrainian standards (DSTU).** | ☐ Yes ☐ No |  |
| **2.5** | **The frequency converter consists of two units - a matching transformer and a power unit - and must support the below functions:** | ☐ Yes ☐ No |  |
| 2.5.1 | adaptive acceleration; | ☐ Yes ☐ No |  |
| 2.5.2 | starting with current limitation; | ☐ Yes ☐ No |  |
| 2.5.3 | torque control; | ☐ Yes ☐ No |  |
| 2.5.4 | adaptive deceleration; | ☐ Yes ☐ No |  |
| 2.5.5 | stop on the run. | ☐ Yes ☐ No |  |
| **2.6** | **Technical characteristics of the frequency converter (minimum requirements):** | ☐ Yes ☐ No |  |
| 2.6.1 | Rated power - not less than that specified for each item. | ☐ Yes ☐ No |  |
| 2.6.2 | Rated voltage of the power supply network – 6 кВ (-20% - +15%). | ☐ Yes ☐ No |  |
| 2.6.3 | Rated motor voltage – 6 кВ ±10% | ☐ Yes ☐ No |  |
| 2.6.4 | Nominal frequency – 50 Hz. | ☐ Yes ☐ No |  |
| 2.6.5 | Efficiency - not less than 0.95 at rated load. | ☐ Yes ☐ No |  |
| 2.6.6 | Output frequency resolution - minimum 80 Hz. | ☐ Yes ☐ No |  |
| 2.6.7 | Instantaneous overcurrent protection. | ☐ Yes ☐ No |  |
| 2.6.8 | Ability to overload – 120% – 2 minutes.; 150% – 3 seconds.. | ☐ Yes ☐ No |  |
| 2.6.9 | Current limitation – 10%-150%. | ☐ Yes ☐ No |  |
| 2.6.10 | Acceleration and braking time - 5...1600 seconds (depending on load). | ☐ Yes ☐ No |  |
| 2.6.11 | Cooling - air, forced. | ☐ Yes ☐ No |  |
| 2.6.12 | Maximum length of unshielded cable without additional filters is at least 200 m | ☐ Yes ☐ No |  |
| 2.6.13 | The maximum length of the shielded cable without the use of additional filters is at least 100 m | ☐ Yes ☐ No |  |
| 2.6.14 | Relative humidity in accordance with IEC 60068-2-3: 5...95 % without condensation, class 3K5-3K66 | ☐ Yes ☐ No |  |
| 2.6.15 | Ambient operating temperature: -15...+40 °C without power reduction | ☐ Yes ☐ No |  |
| 2.6.16 | Ambient operating temperature: -15...+60 °C with power limitation | ☐ Yes ☐ No |  |
| 2.6.17 | Resistance to corrosive and polluting substances in accordance with IEC 60721-3-3 - class 3C3 or 3C2 | ☐ Yes ☐ No |  |
| 2.6.18 | Resistance to foreign particulate matter according to IEC 60721-3-3: class 3S3 or 3S23S2 | ☐ Yes ☐ No |  |
| 2.6.19 | Protection level of the converter housing: not less than IP42 | ☐ Yes ☐ No |  |
| 2.6.20 | Converter cooling: forced air cooling by built-in fans | ☐ Yes ☐ No |  |
| 2.6.21 | Compliance with EMC requirements EN 61800-3:2004/A1:2012 | ☐ Yes ☐ No |  |
| 2.6.22 | Discrete inputs: at least 4 pcs 24 V DC. | ☐ Yes ☐ No |  |
| 2.6.23 | Relay outputs: at least 2 pcs. | ☐ Yes ☐ No |  |
| 2.6.24 | Analogue inputs (4-20 mA / 0-10 V): 2 pcs. | ☐ Yes ☐ No |  |
| 2.6.25 | Analogue outputs (4-20 mA / 0-10 V): 2 pcs. | ☐ Yes ☐ No |  |
| 2.6.26 | Built-in RS485 port with Modbus RTU protocol with RJ45 connector RJ45 | ☐ Yes ☐ No |  |
| 2.6.27 | Optional add-on board for expanding the number of inputs/outputs | ☐ Yes ☐ No |  |
| **2.7** | **The frequency converter can be operated from the local control panel and remotely via the control panel in the control room.** | ☐ Yes ☐ No |  |
| **2.8** | **The motor speed must be set via the control panel and an analogue input** | ☐ Yes ☐ No |  |
| **2.9** | **The current motor speed value is monitored using the remote control display** | ☐ Yes ☐ No |  |
| **2.10** | **The current value of the motor current is monitored using the display of the remote control panel** | ☐ Yes ☐ No |  |
| **2.11** | **The below human-machine interface tools are required:** |  |  |
| 2.11.1 | Control panel with removable text display | ☐ Yes ☐ No |  |
| 2.11.2 | Setting parameters should be displayed as text messages (parameter name and function) and have duplication in the form of numerical values | ☐ Yes ☐ No |  |
| 2.11.3 | The panel should have a built-in description of parameters and alarm messages | ☐ Yes ☐ No |  |
| 2.11.4 | The panel must have a quick settings menu (or a quick settings macro) | ☐ Yes ☐ No |  |
| 2.11.5 | The control panel of the frequency converter informs about the current status of the converter: local or remote control mode, motor speed, pressure level, motor rotation direction, local or remote frequency setting. | ☐ Yes ☐ No |  |
| **2.12** | **Requirements for the software capabilities of the frequency converter:** |  |  |
| 2.12.1 | Ability to program U/F characteristic points U/F | ☐ Yes ☐ No |  |
| 2.12.2 | Possibility to program a quadratic response for pump control | ☐ Yes ☐ No |  |
| 2.12.3 | The function of automatic adaptation (identification) of engine parameters | ☐ Yes ☐ No |  |
| 2.12.4 | Automatic optimisation of engine power consumption | ☐ Yes ☐ No |  |
| 2.12.5 | The function of automatic pick-up of the rotating motor | ☐ Yes ☐ No |  |
| 2.12.6 | The function of changing the local and remote control modes using digital (discrete) signals | ☐ Yes ☐ No |  |
| 2.12.7 | Built-in PID pressure regulator | ☐ Yes ☐ No |  |
| 2.12.8 | Automatic low pump power detection function to protect against running on a closed valve or in the absence of liquid | ☐ Yes ☐ No |  |
| 2.12.9 | Pipeline rupture detection function (work outside the characteristic) | ☐ Yes ☐ No |  |
| 2.12.10 | Availability of an external lock function | ☐ Yes ☐ No |  |
| 2.12.11 | Availability of pump alternation function | ☐ Yes ☐ No |  |
| 2.12.12 | Motor current limiting function is available | ☐ Yes ☐ No |  |
| 2.12.13 | The frequency converter should come with the software loaded, completely ready to use | ☐ Yes ☐ No |  |
| 2.12.14 | The software access level is not lower than the debug level (the ability to make changes to the parameters of the converter) | ☐ Yes ☐ No |  |
| 2.12.15 | The Bidder must provide a copy of the working software on a flash USB (must be provided with the goods upon delivery) | ☐ Yes ☐ No |  |
| 2.12.16 | The software should be adapted for hot water supply systems with the possibility of setting an hourly operating mode. | ☐ Yes ☐ No |  |
| **2.13** | **Required built-in protection functions for the frequency converter:** |  |  |
| 2.13.1 | Protection against input phase failure | ☐ Yes ☐ No |  |
| 2.13.2 | Low voltage protection | ☐ Yes ☐ No |  |
| 2.13.3 | Overvoltage protection (automatic increase in braking time) | ☐ Yes ☐ No |  |
| 2.13.4 | Protection against motor phase failure | ☐ Yes ☐ No |  |
| 2.13.5 | Motor protection (thermal) by current or temperature sensor | ☐ Yes ☐ No |  |
| 2.13.6 | Protection against earth leakage (short circuit to earth) | ☐ Yes ☐ No |  |
| 2.13.7 | Motor phase short circuit protection | ☐ Yes ☐ No |  |
| 2.13.8 | Protection against overheating of the radiator | ☐ Yes ☐ No |  |
| **2.14** | **The frequency converter is installed next to the building (outdoor), on**  **an open site, in an external module.** | ☐ Yes ☐ No |  |
| **2.15** | **The frequency converter must be supplied with an external module.** | ☐ Yes ☐ No |  |
| **2.16** | **Minimum requirements for the external module:** | ☐ Yes ☐ No |  |
| 2.16.1 | recommended overall dimensions (height / width / depth) – no more 3.4 m × 3.2 m × 6.0 m, where: | ☐ Yes ☐ No |  |
| 2.16.1.1 | height – the height of the frequency converter plus the distance to the ceiling for supply-exhaust ventilation | ☐ Yes ☐ No |  |
| 2.16.1.2 | width – the width of the frequency converter plus the distance to the walls for the service area and the installation of 0.4 kV cabinets for own needs and lighting | ☐ Yes ☐ No |  |
| 2.16.1.3 | depth – the depth of the frequency converter plus the distance on both sides to the walls for the service area | ☐ Yes ☐ No |  |
| 2.16.2 | cable duct (false floor) under the external module with a height of 0.8 m, holes for the input / output of cables should be made with sealed Roxtec cable entries (or equivalent); | ☐ Yes ☐ No |  |
| 2.16.3 | metal frame - galvanized; | ☐ Yes ☐ No |  |
| 2.16.4 | insulation - sandwich panel, thickness not less than 100 mm; | ☐ Yes ☐ No |  |
| 2.16.5 | installation of side walls using sealing gaskets; | ☐ Yes ☐ No |  |
| 2.16.6 | the roof slope must be one-sided, for the possibility of installing an external module under the wall of the building; | ☐ Yes ☐ No |  |
| 2.16.7 | the entrance door and the side of the cable pit with a double sealing circuit | ☐ Yes ☐ No |  |
| 2.16.8 | the module must be equipped with the following technological systems: |  |  |
| 2.16.8.1 | the supply-exhaust ventilation system is forced; | ☐ Yes ☐ No |  |
| 2.16.8.2 | air conditioning system (in the operating temperature zone of the frequency converter); | ☐ Yes ☐ No |  |
| 2.16.8.3 | the heating system (providing the recommendations of the manufacturer of the frequency converter); | ☐ Yes ☐ No |  |
| 2.16.8.4 | lighting system; | ☐ Yes ☐ No |  |
| 2.16.8.5 | drainage system (rainwater from the roof and ground water from the cable pit); | ☐ Yes ☐ No |  |
| 2.16.8.6 | fire and security alarm system | ☐ Yes ☐ No |  |
| **2.17** | **Each phase must have additional batteries (the possibility of bypassing a damaged power element), which in the event of a malfunction are short-circuited, so that the frequency converter continues to operate** | ☐ Yes ☐ No |  |
| **2.18** | **The frequency converter must have an additional switchgear, in the form of a cell with a vacuum switch, which supplies the motor directly from the frequency converter. The vacuum circuit breaker must have an electromechanical interlock with the direct start cell, which makes it impossible to operate both circuit breakers simultaneously. In case of damage to the frequency converter, the switch to power the motor from the converter is turned off. This allows the motor power switch to be switched on from the mains by direct start** | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** |  |  |
| 2.19.1 | The packaging of the equipment must guarantee protection against mechanical damage. | ☐ Yes ☐ No |  |
| 2.19.2 | Checking the labelling and packaging must be available - after delivery. The packaging of the equipment must indicate: | ☐ Yes ☐ No |  |
| 2.19.2.1 | order number, | ☐ Yes ☐ No |  |
| 2.19.2.2 | brand name, | ☐ Yes ☐ No |  |
| 2.19.2.3 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.2.4 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.2.5 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional requirements** |  |  |
| 3.1 | Bidder provided shipping dimension: L x W x H, as well as Kerb/shipping weight in kg of the equipment. | ☐ Yes ☐ No | Please provide details |
| 3.2 | Bid includes the Country of origin of the goods. | ☐ Yes ☐ No | Please provide details |

**C.1. Delivery requirements for lot 1.**

| **UNOPS Requirements** | | **Is the bid compliant?** Bidder to complete | **Details**  Bidder to complete |
| --- | --- | --- | --- |
| **Delivery time** | **Bidders shall deliver and unload the goods as soon as possible but not later than December 25, 2024. Bidders must provide realistic delivery time for the proposed goods.**  **DDP Incoterms: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_calendar days from the date of PO signature.**  Partial delivery of the goods in batches (one batch should contain one frequency converter according to the requirements and fully operational) within this period is acceptable. | ☐Yes ☐ No |  |
| **Delivery place and Incoterms rules** | DDP, Kharkiv city, Ukraine.  The bidder will be responsible for covering the demurrage costs, if any. | ☐Yes ☐ No |  |
| **Consignee details** | Delivery address and consignee details will be provided to the successful Bidder(s) | ☐Yes ☐ No |  |

**Lot 2. Electric motors**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant? Bidder to complete** | **Details of the offered goods. Bidder to complete** |
| --- | --- | --- | --- |
|  | **Electric motors with different characteristics according to the below requirements** | ☐ Yes ☐ No |  |
| **Item 1** | **Electric motor for hot blower fan, 160 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 100 mm, terminal box location - right - 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 2** | **Electric motor for hot blower fan, 160 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 100 mm, terminal box location - left – 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 3** | **Electric motor for chimneys, 355 kW (+/- 10 %), 6 kV, 750 rpm, shaft Ø 110 mm, terminal box location - right – 2 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 4** | **Electric motor for feed pump, 400 kW (+/- 10 %), 6 kV, 1500 rpm, shaft Ø 90 mm, terminal box location - right – 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 5** | **Electric motor for motor-generator backup excitation, 150 kW (+/- 10 %), 6 kV, 1000 rpm, shaft Ø 90 mm, terminal box location - right – 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 6** | **Electric motor for circulation pump. 400 kW (+/- 10 %), 6 kV, 1000 rpm, shaft Ø 110 mm, terminal box location - on the right – 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **Materials, goods and equipment shall be supplied in accordance with applicable Ukrainian laws, regulations and rules, and shall comply with relevant European and international standards and be certified in accordance with the ISO 9001 system (Manufacturer must be ISO 9001 certified and must provide the certificate). In case of discrepancies between national and international standards, the standards with higher requirements shall apply. The equipment must be produced in compliance with the below standards (Bidder or producer of the equipment must provide a passport of the equipment confirming the compliance with the below standards):** | ☐ Yes ☐ No |  |
| 1.1.1 | DSTU IEC EN 60034-1 Electric rotary machines. Part 1. Nominal and operational characteristics | ☐ Yes ☐ No |  |
| 1.1.2 | DSTU IEC 60034-2-1 Electric rotary machines. Part 2-1. Standard methods for determining losses and efficiency during tests (except for machines for traction vehicles) | ☐ Yes ☐ No |  |
| 1.1.3 | DSTU IEC 60034-8 Electric rotary machines. Part 8. Pin marking and direction of rotation | ☐ Yes ☐ No |  |
| 1.1.4 | DSTU IEC 60034-7 Electric rotary machines. Part 7. Classification of types by design, mounting and placement of the terminal box (IM code) | ☐ Yes ☐ No |  |
| 1.1.5 | DSTU IEC 60034-11 Electric rotary machines. Part 11. Thermal protection | ☐ Yes ☐ No |  |
| 1.1.6 | DSTU IEC 60034-6 Electric rotary machines. Part 6. Cooling methods (IC code) | ☐ Yes ☐ No |  |
| 1.1.7 | DSTU IEC 60034-5 Electric rotary machines. Part 5. Degrees of protection provided by integral construction of rotating electrical machines (ІР code). Classification | ☐ Yes ☐ No |  |
| 1.1.8 | DSTU IEC 60034-14 Electric rotary machines. Part 14. Mechanical vibration of some mechanisms with a shaft height of 56 mm and above. Measurement, evaluation and permissible levels of vibration | ☐ Yes ☐ No |  |
| 1.1.9 | DSTU IEC 60034-9 Electric rotary machines. Part 9. Norms on permissible noise levels | ☐ Yes ☐ No |  |
| 1.1.10 | DSTU IEC 60034-12 Electric rotary machines. Part 12. Starting characteristics of single-speed three-phase asynchronous motors | ☐ Yes ☐ No |  |
| 1.1.11 | DSTU IEC 60038 Reference voltage according to IES | ☐ Yes ☐ No |  |
| 1.1.12 | EC Directive 97/23/ EC On harmonization of legislation of Member States | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must be in continuous business of supplying of the offered or equivalent equipment for at least past 3 years.** | ☐ Yes ☐ No |  |
| **1.3** | **The Bidder must have experience in the delivery of similar equipment in Ukraine or EU/EEA countries and must provide evidence (contracts, POs, certificates of completion, etc) of successful implementation of at least 2 contracts for supply of the offered or equivalent equipment realised in the past 3 years.** | ☐ Yes ☐ No |  |
| **1.4** | **The Bidder who is not the manufacturer of the Equipment, shall provide Manufacturer's Authorisation for supply of the Equipment confirming its rights to supply the said Equipment to Ukraine.** | ☐ Yes ☐ No |  |
| **1.5** | **Bidder or producer of the equipment must have a representative office in Ukraine that provides after sale service available in Ukraine or agreement with the local representative of the producer or service company that can provide maintenance and after sale services for the equipment. Bidder must provide contact details of the service centre (or list of the service centers) as well as confirmation from the service centre that it will provide after sale services for the proposed equipment.** | ☐ Yes ☐ No |  |
| **1.6** | **Warranty service. Within the warranty period, the Supplier or its authorized service centre shall provide maintenance and/or repair services and/or replacement of the equipment not later than 30 (thirty) calendar days from the date of receipt of written or E-mail notification from an authorized party. The name of the company, address, telephone- and fax numbers, e-mail address must be mentioned in the bid. All costs connected with warranty maintenance are covered by the Supplier.** | ☐ Yes ☐ No |  |
| **1.7** | **The warranty for the equipment must be min. 1 year. Warranty must include manufacturing defects and labour charges.** | ☐ Yes ☐ No |  |
| **1.8** | **In the production of the Equipment (electric motors) offered for this procurement, the use of materials and components included in the List of goods prohibited for importation into the customs territory of Ukraine originating from the russian federation, approved by the Resolution of the Cabinet of Ministers of Ukraine No.1147 dated December 30, 2015, is not allowed. The Bidder shall submit the relevant Declaration (confirming that the offered equipment is compliant with the above resolution).** | ☐ Yes ☐ No |  |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Full scope of operating, maintenance and repair instructions for all the Goods supplied. The documentation should include, but not be limited to, the following: | ☐ Yes ☐ No |  |
| 1.9.2 | Frequency of necessary preventive maintenance during normal operation; | ☐ Yes ☐ No |  |
| 1.9.3 | Logs and operating instructions; | ☐ Yes ☐ No |  |
| 1.9.4 | Product information including: | ☐ Yes ☐ No |  |
| 1.9.1.3.1 | Name and address of the manufacturer; | ☐ Yes ☐ No |  |
| 1.9.1.3.2 | List of service centres in Ukraine; | ☐ Yes ☐ No |  |
| 1.9.1.3.3 | Type and model; | ☐ Yes ☐ No |  |
| 1.9.1.3.4 | Serial number; | ☐ Yes ☐ No |  |
| 1.9.1.3.5 | Duties and rates, where applicable. | ☐ Yes ☐ No |  |
| **1.10** | **Documentation that must be provided with the goods upon delivery.** |  |  |
| 1.10.1 | Two copies of the operating and maintenance manual in Ukrainian must be included with each piece of equipment. Documentation must contain information: |  |  |
| 1.10.1.1 | The periodicity of necessary scheduled and preventive maintenance during normal operation. | ☐ Yes ☐ No |  |
| 1.10.1.2 | Operating instructions for the operating personnel on duty describing the actions in the event of an accident or emergency. | ☐ Yes ☐ No |  |
| 1.10.2 | Certificates of conformity for the proposed equipment | ☐ Yes ☐ No |  |
| 1.10.3 | The necessary requirements for waste management and recycling of used materials should be specified in the manufacturer's documentation. | ☐ Yes ☐ No |  |
| 1.10.4 | Instructions for transporting and storing equipment and materials; | ☐ Yes ☐ No |  |
| 1.10.5 | All necessary manufacturer's certificates (technical certificates) and quality guarantees. | ☐ Yes ☐ No |  |
| 1.10.6 | Protocols of factory tests of equipment (1 copy (original) for each position) | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** |  |  |
| **2.1** | **All goods must be new, unused and new or current models.** | ☐ Yes ☐ No |  |
| **2.2** | **Materials and goods produced abroad and imported into Ukraine must have a certificate of compliance with Ukrainian standards (DSTU).** | ☐ Yes ☐ No |  |
| **2.3** | **Technical characteristics of the electric motors (minimum requirements):** |  |  |
| 2.3.1 | three-phase asynchronous electric motor (according to DIN EN 60034); | ☐ Yes ☐ No |  |
| 2.3.2 | the engine must run in S1 mode | ☐ Yes ☐ No |  |
| 2.3.3 | engine speed: |  |  |
| 2.3.3.1 | for Item 1 – 750 rpm; | ☐ Yes ☐ No |  |
| 2.3.3.2 | for Item 2 – 750 rpm; | ☐ Yes ☐ No |  |
| 2.3.3.3 | for Item 3 – 750 rpm; | ☐ Yes ☐ No |  |
| 2.3.3.4 | for Item 4 – 1500 rpm; | ☐ Yes ☐ No |  |
| 2.3.3.5 | for Item 5 – 1000 rpm; | ☐ Yes ☐ No |  |
| 2.3.3.6 | for Item 6 – 1000 rpm; | ☐ Yes ☐ No |  |
| 2.3.4 | rated power: |  |  |
| 2.3.4.1 | for Item 1 – 160 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.4.2 | for Item 2 – 160 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.4.3 | for Item 3 – 355 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.4.4 | for Item 4 – 400 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.4.5 | for Item 5 – 150 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.4.6 | for Item 6 – 400 kW (+/- 10 %); | ☐ Yes ☐ No |  |
| 2.3.5 | efficiency ratio (efficiency) - not less than 90% | ☐ Yes ☐ No |  |
| 2.3.6 | the motor must be equipped with six Pt100 type sensors to monitor the winding temperature; | ☐ Yes ☐ No |  |
| 2.3.7 | the engine must be equipped with two sensors of the Pt100 type to monitor the temperature of the bearings; | ☐ Yes ☐ No |  |
| 2.3.8 | insulation temperature resistance: class F or higher; | ☐ Yes ☐ No |  |
| 2.3.9 | operating voltage: 3~6000V with a permissible deviation of ±10%; | ☐ Yes ☐ No |  |
| 2.3.10 | current frequency: 50Hz; | ☐ Yes ☐ No |  |
| 2.3.11 | protection class: IP55 or higher according to IEC 60034-5; | ☐ Yes ☐ No |  |
| 2.3.12 | ambient temperature: from 0°C to +40°C. | ☐ Yes ☐ No |  |
| 2.3.13 | Cooling requirements: forced | ☐ Yes ☐ No |  |
| 2.3.14 | Power Factor:not less than 0.85 under rated load conditions | ☐ Yes ☐ No |  |
| **2.4** | **Features of connecting engines** |  |  |
| 2.4.1 | Shaft diameter: | ☐ Yes ☐ No |  |
| 2.4.1.1 | Hot blower fan (Item 1) – 100 mm | ☐ Yes ☐ No |  |
| 2.4.1.2 | Hot blower fan (Item 2) – 100 mm | ☐ Yes ☐ No |  |
| 2.4.1.3 | Chimneys (Item 3) – 110 mm | ☐ Yes ☐ No |  |
| 2.4.1.4 | Feed pump (Item 4) – 90 mm | ☐ Yes ☐ No |  |
| 2.4.1.5 | Motor-generator backup excitation (Item 5) – 90 mm | ☐ Yes ☐ No |  |
| 2.4.1.6 | Circulation pump (Item 6) – 110 mm | ☐ Yes ☐ No |  |
| 2.4.2 | Location of the terminal box (view from the half coupling side) | ☐ Yes ☐ No |  |
| 2.4.2.1 | Hot blower fan (Item 1) – right | ☐ Yes ☐ No |  |
| 2.4.2.2 | Hot blower fan (Item 2) – left | ☐ Yes ☐ No |  |
| 2.4.2.3 | Chimneys (Item 3) – right | ☐ Yes ☐ No |  |
| 2.4.2.4 | Feed pump (Item 4) – right | ☐ Yes ☐ No |  |
| 2.4.2.5 | Motor-generator backup excitation (Item 5) – right | ☐ Yes ☐ No |  |
| 2.4.2.6 | Circulation pump (Item 6) – right | ☐ Yes ☐ No |  |
| **2.5** | **Marking** |  |  |
| 2.5.1 | Engines must be marked with a nameplate firmly attached to the housing. The nameplate must contain the following information: | ☐ Yes ☐ No |  |
| 2.5.1.1 | manufacturer's name and trademark; | ☐ Yes ☐ No |  |
| 2.5.1.2 | mark of compliance; | ☐ Yes ☐ No |  |
| 2.5.1.3 | designation of the standard and technical conditions according to which the products are manufactured and identified; | ☐ Yes ☐ No |  |
| 2.5.1.4 | engine serial number; | ☐ Yes ☐ No |  |
| 2.5.1.5 | year of graduation; | ☐ Yes ☐ No |  |
| 2.5.1.6 | technical characteristics: power, rotation frequency, voltage, current, connection diagram, cosφ, efficiency; | ☐ Yes ☐ No |  |
| 2.5.1.7 | engine weight. | ☐ Yes ☐ No |  |
| 2.5.2 | The material of the plate and the marking method must ensure its preservation during the entire service life. | ☐ Yes ☐ No |  |
| **3** | **Packaging requirements** |  |  |
| 3.1 | The packaging of the equipment must guarantee protection against mechanical damage. | ☐ Yes ☐ No |  |
| 3.2 | Checking the labelling and packaging must be available - after delivery. The packaging of the equipment must indicate: | ☐ Yes ☐ No |  |
| 3.2.1 | order number, | ☐ Yes ☐ No |  |
| 3.2.2 | brand name, | ☐ Yes ☐ No |  |
| 3.2.3 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 3.2.4 | gross weight in kg, | ☐ Yes ☐ No |  |
| 3.2.5 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **4** | **The Supplier shall carry out a standard set of tests required for each item of Goods at the manufacturing plant prior to shipment to ensure that each item of Goods delivered complies with the provisions of the Technical Specification** | ☐ Yes ☐ No |  |
| **5** | **The appropriate test report (or any other acceptable document confirming the conformity of the product) issued by either the Manufacturer or the Supplier must be submitted to the Buyer prior to shipment** | ☐ Yes ☐ No |  |
| **6** | **Additional requirements** |  |  |
| 6.1 | Bidder provided shipping dimension: L x W x H, as well as Kerb/shipping weight in kg of the equipment. | ☐ Yes ☐ No | Please provide details |
| 6.2 | Bid includes the Country of origin of the goods. | ☐ Yes ☐ No | Please provide details |

**C.2. Delivery requirements for lot 2.**

| **UNOPS Requirements** | | **Is the bid compliant?** Bidder to complete | **Details**  Bidder to complete |
| --- | --- | --- | --- |
| **Delivery time** | **Bidders shall deliver and unload the goods as soon as possible but not later than December 25, 2024. Bidders must provide realistic delivery time for the proposed goods.**  **DDP Incoterms: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_calendar days from the date of PO signature.**  Partial delivery of the goods in batches within this period is acceptable. | ☐Yes ☐ No |  |
| **Delivery place and Incoterms rules** | DDP, Kharkiv city, Ukraine.  The bidder will be responsible for covering the demurrage costs, if any. | ☐Yes ☐ No |  |
| **Consignee details** | Delivery address and consignee details will be provided to the successful Bidder(s) | ☐Yes ☐ No |  |