**Section II: Schedule of requirements**

1. **Summary of Requirements for the supply of Gas cogeneration units and gas generators to Ukraine.**

**UNOPS requirements are comprised of the following 6 (six) lots:**

**Lot 1. Cogeneration gas unit 70 - 80 kW - 4 PCS**

**Lot 2. Cogeneration gas units (250-350 kW) including the below items:**

Item 2.1. Cogeneration gas unit 250-260 kW - 2 PCS

Item 2.2. Cogeneration gas unit 300-350 kW - 2 PCS

**Lot 3. Cogeneration gas unit 700-750 kW - 2 PCS**

**Lot 4. Cogeneration gas unit 1500-1560 kW - 3 PCS**

**Lot 5 .Cogeneration gas units (1500 - 2100 kW) including the below items:**

Item 5.1. Cogeneration gas unit 1500-1560 kW - 1 PCS

Item 5.2. Cogeneration gas unit 2000 - 2100 kW - 1 PCS

**Lot 6. Gas generators**

Item 6.1. Gas generator 40-50 kW - 5 PCS

Item 6.2. Gas generator 60-70 kW - 5 PCS

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

**Lot 1. Cogeneration gas unit 70 -80 kW - 4 PCS**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 1** | **Cogeneration gas unit 70 - 80 kW - 4 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **Cogeneration units must be manufactured in accordance with the requirements of regulatory documents in force in Ukraine, including state standards (DSTU), technical specifications (TS), ISO, and other standards established by current legislation. The producer must comply with the following standards, with confirmation of compliance included in the equipment’s passport/manual:** | ☐ Yes ☐ No |  |
| 1.1.1 | The manufacturer is certified under ISO 9001:2015 for the design, production, and maintenance of internal combustion engines, cogeneration units, power plants, and associated spare parts. Include ISO 9001:2015 certification details in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.2 | The electrical equipment of the cogeneration units must comply with DSTU EN 60204-1:2015. Certificate of compliance with DSTU EN 60204-1:2015 must be provided. | ☐ Yes ☐ No |  |
| 1.1.3 | The cogeneration units must comply with the Low Voltage Directive (2014/35/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.4 | The cogeneration units must comply with the Electromagnetic Compatibility Directive Directive (2014/30/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (cogeneration units) 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 (cogeneration units), shall provide Manufacturer's Authorisation for supply of the Equipment (cogeneration units) 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 labor, parts, and transportation 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 | Please provide details |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Sample passport/quality certificate from the manufacturer for a product of similar (or higher) power and voltage class with technical characteristics. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of compliance with Ukrainian technical requirements. | ☐ Yes ☐ No |  |
| 1.9.3 | Example of the operating instructions (manual) for the product, including documentation on scheduled repairs for a product of similar power and voltage class, in Ukrainian language. | ☐ Yes ☐ No |  |
| 1.9.4 | Example of dimensional and installation drawings for a product of similar power and voltage class, control cabinet diagrams. | ☐ Yes ☐ No |  |
| 1.9.5 | A letter of guarantee from the Bidder stating that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.9.6 | Manufacturer's technical literature/catalogue, all confirming that the offered items comply with required specifications. | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.10.1 | All documentation required for on-site installation shall be included in the scope of delivery, listed in the specifications, labelled and packaged for transport. | ☐ Yes ☐ No |  |
| 1.10.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.10.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **The equipment must be a gas-piston cogeneration unit.** | ☐ Yes ☐ No |  |
| **2.3** | **The equipment must be equipped with: a gas piston engine equipped with all necessary systems, components, pipelines and power cables in accordance with the manufacturer's standard designs, ensuring reliable and uninterrupted operation of the engine in each of the provided operating modes, mounted together with the generator on a robust and vibration-dampened common frame for mounting both the engine and generator, designed to ensure structural integrity and ease of maintenance.** | ☐ Yes ☐ No |  |
| **2.4** | **The equipment shall be equipped with the necessary technological systems as listed below:** | ☐ Yes ☐ No |  |
| 2.4.1 | engine lubrication system, circulating under pressure, with free oil discharge into the track; | ☐ Yes ☐ No |  |
| 2.4.2 | gas supply system; | ☐ Yes ☐ No |  |
| 2.4.3 | set of required (mandatory) sensors; | ☐ Yes ☐ No |  |
| 2.4.4 | an electric starter motor and battery system for reliable engine startup; | ☐ Yes ☐ No |  |
| 2.4.5 | cooling tower that removes heat from the cooling circuit of the (process) mixture; | ☐ Yes ☐ No |  |
| 2.4.6 | a comprehensive cooling system including a radiator, cooling fans, coolant pumps, and all necessary coolant lines to maintain optimal engine temperatures during operation with emergency cooling tower that removes unused heat to operate in the absence of heat demand, removing excess cooling heat to ensure a stable plant output; | ☐ Yes ☐ No |  |
| 2.4.7 | the necessary pumping equipment for the cooling circuits; | ☐ Yes ☐ No |  |
| 2.4.8 | high-quality exhaust manifold and noise-suppressing silencer to reduce noise levels and manage exhaust gases efficiently; | ☐ Yes ☐ No |  |
| 2.4.9 | flue gas heat recovery system; | ☐ Yes ☐ No |  |
| 2.4.10 | an Engine Control Unit (ECU) to manage engine operation, including fuel injection, ignition timing, and engine diagnostics, with a user-friendly control panel with display screens to monitor and control engine and generator parameters, including start/stop functions, operational status, and fault indicators; | ☐ Yes ☐ No |  |
| 2.4.11 | exhaust gas recovery boiler for a gas piston plant; | ☐ Yes ☐ No |  |
| 2.4.12 | voltage generator: 0.4 kV | ☐ Yes ☐ No |  |
| 2.4.13 | gas inlet pressure - no more than 2.0 atm. | ☐ Yes ☐ No |  |
| **2.5** | **The equipment (cogeneration unit) must provide for the possibility of autonomous start-up (in the event of a power outage).** | ☐ Yes ☐ No |  |
| **2.6** | **The cogeneration plant must be capable of operating in both parallel with the network and in "island" mode (standalone operation). The system must seamlessly transition between these modes to ensure continuous power supply under all conditions.**  **In addition, the following components and requirements must be met:** | ☐ Yes ☐ No |  |
| 2.6.1 | Parallel Operation: The cogeneration plant must be fully compatible with grid connection and be able to synchronize with the network, sharing the load as required. | ☐ Yes ☐ No |  |
| 2.6.2 | Island Mode Operation: The plant must be capable of operating independently from the grid, providing reliable power in the event of a network failure. This mode should include automatic start-up and load management capabilities. | ☐ Yes ☐ No |  |
| 2.6.3 | Starting Batteries: The cogeneration plant must include starting batteries as mandatory components. These batteries should be of adequate capacity to ensure reliable engine start-up in all operating conditions, including during network outages. | ☐ Yes ☐ No |  |
| **2.7** | **The equipment (cogeneration unit) must be capable of autonomous operation during such power outages.** | ☐ Yes ☐ No |  |
| **2.8** | **The equipment (cogeneration unit) must ensure that the cos φ value is maintained in the range of 1.0-0.90 at the balance point when operating in parallel with the general network.** | ☐ Yes ☐ No |  |
| **2.9** | **The equipment (cogeneration unit) must provide the function of automatic voltage regulation at a given level.** | ☐ Yes ☐ No |  |
| **2.10** | **The equipment (cogeneration unit) must provide power control of flows to and from the network.** | ☐ Yes ☐ No |  |
| **2.11** | **The electrical power output must be at least as specified in the table below.** | ☐ Yes ☐ No |  |
| **2.12** | **Emission Control: Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%.** | ☐ Yes ☐ No |  |
| 2.12.1 | Emission control systems such as catalytic converters to reduce harmful emissions in compliance with environmental regulations. | ☐ Yes ☐ No |  |
| 2.12.2 | Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%. | ☐ Yes ☐ No |  |
| **2.13** | **The cogeneration must be delivered in a container.** | ☐ Yes ☐ No |  |
| **2.14** | **Thermal efficiency minimum 36%.** | ☐ Yes ☐ No |  |
| **2.15** | **The gas generators must demonstrate high fuel efficiency, with a target thermal efficiency of at least 36% and an overall efficiency (electrical and thermal) of at least 80%. Efficiency data and testing documentation must be provided. Generators achieving higher efficiencies will be given preference.** | ☐ Yes ☐ No |  |
| **2.16** | **Technical requirements for the generator** | ☐ Yes ☐ No |  |
| 2.16.1 | Voltage, kV: 0.4 | ☐ Yes ☐ No |  |
| 2.16.2 | Current frequency, Hz: 50. | ☐ Yes ☐ No |  |
| 2.16.3 | Insulation class: H. | ☐ Yes ☐ No |  |
| 2.16.4 | Pre-load heating class: F. | ☐ Yes ☐ No |  |
| 2.16.5 | Maximum environmental temperature: 40 C. | ☐ Yes ☐ No |  |
| 2.16.6 | Winding temperature sensors: available. | ☐ Yes ☐ No |  |
| **2.17** | **Requirements to the management and control system** | ☐ Yes ☐ No |  |
| 2.17.1 | automatic engine speed control; | ☐ Yes ☐ No |  |
| 2.17.2 | automatic temperature control in cooling and lubrication systems; | ☐ Yes ☐ No |  |
| 2.17.3 | automatic regulation of the generator voltage; | ☐ Yes ☐ No |  |
| 2.17.4 | automatic recharging of batteries; | ☐ Yes ☐ No |  |
| 2.17.5 | displaying the values of the monitored engine-generator parameters on the local engine dashboard (for engine operation parameters) and on the generator control cabinet panel (for electrical parameters); | ☐ Yes ☐ No |  |
| 2.17.6 | autonomous operation in case of power failure from interface protection systems; | ☐ Yes ☐ No |  |
| 2.17.7 | smooth voltage regulation in the range from -10% to +5%; | ☐ Yes ☐ No |  |
| 2.17.8 | control of the engine oil pump; | ☐ Yes ☐ No |  |
| 2.17.9 | power supply and control of the engine speed controller; | ☐ Yes ☐ No |  |
| 2.17.10 | engine start and stop control; | ☐ Yes ☐ No |  |
| 2.17.11 | control of the engine starting system; | ☐ Yes ☐ No |  |
| 2.17.12 | engine gas valve control; | ☐ Yes ☐ No |  |
| 2.17.13 | automatic emergency stop with disconnection and protection of the following parameters (with a signal from the control cabinet to disconnect the generator switch): | ☐ Yes ☐ No |  |
| *2.17.13.1* | *overload exceeding 10% of the nominal;* | ☐ Yes ☐ No |  |
| *2.17.13.2* | *at reverse power;* | ☐ Yes ☐ No |  |
| *2.17.13.3* | *ignition malfunction;* | ☐ Yes ☐ No |  |
| *2.17.13.4* | *maximum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.5* | *minimum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.6* | *low gas pressure;* | ☐ Yes ☐ No |  |
| *2.17.13.7* | *gas in the room;* | ☐ Yes ☐ No |  |
| *2.17.13.8* | *water pressure in the internal circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.9* | *water pressure in the external circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.10* | *oil pressure after the filter at the engine inlet;* | ☐ Yes ☐ No |  |
| *2.17.13.11* | *water temperature at the engine outlet;* | ☐ Yes ☐ No |  |
| *2.17.13.12* | *oil temperature at the engine inlet.* | ☐ Yes ☐ No |  |
| 2.17.14 | The control cabinet and software must ensure the following: | ☐ Yes ☐ No |  |
| *2.17.14.1* | *display of all engine-generator parameters on the panel and screen in the boiler house;* | ☐ Yes ☐ No |  |
| *2.17.14.2* | *the possibility of emergency stop of the engine-generator from the control panel in the operator's room;* | ☐ Yes ☐ No |  |
| *2.17.14.3* | *automatic connection of the generator to the grid using a synchroniser;* | ☐ Yes ☐ No |  |
| *2.17.14.4* | *warning and alarm signals when the parameters go beyond the set limits;* | ☐ Yes ☐ No |  |
| *2.17.15* | *The control system must be capable of recording and storing key operational parameters and emergency signals in a data storage system. The parameters identified in clauses 2.17.15.1 to 2.17.15.3 must be logged and archived, with data retention for a minimum period of 1 month:* | ☐ Yes ☐ No |  |
| *2.17.15.1* | *Operational Parameters to be Logged:*  *Electrical Energy Output: Amount of released electrical energy.*  *Engine Parameters:*  *Engine mill (operational state of the engine).*  *Coolant temperature.*  *Engine wrap (operational state of engine components).*  *Battery: Battery voltage.*  *Controller: Controller mode.*  *Generator Parameters:*  *Generator voltage (L1, L2, L3).*  *Generator frequency.*  *Generator current (L1, L2, L3).*  *Generator tension coefficient.*  *Generator pressure (active).*  *Reactive power of the generator.*  *Generator is operating under load (indication of generator load status).*  *Miscellaneous:*  *Press coolant.*  *Olive press (pressure status).*  *Tightness of the hem and hem tightness coefficient.*  *Active power setting.*  *Engine operating hours.*  *Number of starts.* | ☐ Yes ☐ No |  |
| *2.17.15.2* | *Archived Parameters (Mandatory) to be Logged:*  *Engine Operating Hours.*  *Number of Starts.*  *Electrical Energy Output.*  *Generator Voltage (per phase).*  *Generator Frequency.*  *Generator Current (per phase).*  *Press Coolant.*  *Olive Press.* | ☐ Yes ☐ No |  |
| *2.17.15.3* | *General Emergency Signals to be Logged:*  *Emergency signal of the KSU (based on designated signal parameters).*  *Press coolant lower than normal.*  *Engine coolant temperature higher than normal.*  *Engine wrap higher/lower than normal.*  *Battery voltage lower than normal.*  *Generator frequency abnormal.*  *Generator voltage abnormal.* | ☐ Yes ☐ No |  |
| 2.17.16 | System requirements for air start - a filter element must be provided in the combustion air supply. | ☐ Yes ☐ No |  |
| 2.17.17 | Requirements for the cooling system - flange connections for water inlet and outlet from the cooling jacket, flange connections for inlet and outlet ports must be available. | ☐ Yes ☐ No |  |
| **2.18** | **Requirements for the Equipment Container** | ☐ Yes ☐ No |  |
| 2.18.1 | The container construction shall ensure safe transportation and installation of the Equipment (the container shall not allow damage to the Equipment during transportation and installation). The container construction shall ensure the maintenance of the established microclimate during the operation of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.2 | The container should have a rigid metal structure made of high-quality steel sheets with anti-corrosion treatment and painting, internal thermal insulation of walls and ceiling, as well as internal lining of the engine room with perforated steel sheets. | ☐ Yes ☐ No |  |
| 2.18.3 | The container must allow fulfilment of all requirements necessary for the operation (work) of the Equipment (cogeneration unit) in all provided modes. The container construction shall provide the possibility of internal inspection of the Equipment and access to the main elements of the Equipment for regular maintenance. | ☐ Yes ☐ No |  |
| 2.18.4 | The container shall have all necessary pipework and internal cable connections provided and installed within the container to ensure standard procedures and operation of the Equipment in each intended mode of operation. | ☐ Yes ☐ No |  |
| 2.18.5 | The Container shall have ventilation windows that are equipped with special protective grilles on the outside to protect the internal Equipment from atmospheric precipitation and foreign objects. | ☐ Yes ☐ No |  |
| 2.18.6 | The container shall have doors on each side of the container with handles for opening from the outside and locks to prevent unauthorised access.. | ☐ Yes ☐ No |  |
| 2.18.7 | The container is equipped with 220 V internal lighting lamps from an external power supply via a panel or auxiliary service panel. | ☐ Yes ☐ No |  |
| 2.18.8 | The container must be equipped with 220V (10A) sockets, which are installed in the container from an external power source through a panel or auxiliary service panel for connecting tools. The sockets are located on both sides of the container and next to the control cabinet and distribution board. | ☐ Yes ☐ No |  |
| 2.18.9 | Inside the container: on the outer wall of the container there are pipelines for fuel supply from the gas inlet flange and other necessary elements to ensure gas supply. | ☐ Yes ☐ No |  |
| 2.18.10 | The engine cooling system shall be equipped with all necessary components, pipework and power cables to ensure reliable and uninterrupted engine operation in each envisaged operating mode of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.11 | The exhaust system of the engine shall be equipped with a noise silencer and all necessary components and pipework to ensure reliable and trouble-free operation of the engine in each of the envisaged operating modes of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.12 | The container must have a built-in gas monitoring system using modern analysers, light and sound sensors, electromagnetic gas supply valves and methane sensors. The system continuously (continuously) monitors the gas level inside the container. | ☐ Yes ☐ No |  |
| 2.18.13 | The container must have a fire alarm system. | ☐ Yes ☐ No |  |
| 2.18.14 | Inside the container: a common built-in grounding bus with 2 points shall be provided for all major elements of the Equipment (cogeneration plant) (i.e. generator, motor, panels, lights, sockets) for further connection to the grounding system on site to the outer frame of the container (diagonally on both sides). | ☐ Yes ☐ No |  |
| 2.18.15 | The container construction should include a port for connecting external power, control and alarm cables. | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** | ☐ Yes ☐ No |  |
| 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 |  |
| 2.19.3 | order number, | ☐ Yes ☐ No |  |
| 2.19.4 | brand name, | ☐ Yes ☐ No |  |
| 2.19.5 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.6 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.7 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general requirements** | ☐ Yes ☐ No |  |
| 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 |
| 3.3 | Spare Parts and Consumables: Bidder must provide a list of recommended spare parts and consumables for the first 2 years of operation, including costs. | ☐ Yes ☐ No |  |
| 3.4 | Performance Testing and Acceptance Criteria: Bidder must provide performance testing upon delivery and outline acceptance criteria, including who will conduct the testing and how results will be documented. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No |  |
| 3.5 | Bidder must provide a Training proposal for the personnel who will operate and maintain the cogeneration units, including the scope and duration of the training. Training must be provided in on-line format in Ukrainian language. The final program of the training must be agreed with the beneficiary before the beginning of the training. Cost of the training must be included in the cost of the units. | ☐ Yes ☐ No |  |

**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 a minimum one full item (full q-ty required for item) 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. Cogeneration gas units (250-350 kW)**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 2.** | **Gas cogeneration units according to the below specifications** |  |  |
| **Item 2.1** | **Cogeneration gas unit 250 - 260 kW - 2 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 2.2** | **Cogeneration gas unit 300 - 350 kW - 2 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **Cogeneration units must be manufactured in accordance with the requirements of regulatory documents in force in Ukraine, including state standards (DSTU), technical specifications (TS), ISO, and other standards established by current legislation. The producer must comply with the following standards, with confirmation of compliance included in the equipment’s passport/manual:** | ☐ Yes ☐ No |  |
| 1.1.1 | The manufacturer is certified under ISO 9001:2015 for the design, production, and maintenance of internal combustion engines, cogeneration units, power plants, and associated spare parts. Include ISO 9001:2015 certification details in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.2 | The electrical equipment of the cogeneration units must comply with DSTU EN 60204-1:2015. Certificate of compliance with DSTU EN 60204-1:2015 must be provided. | ☐ Yes ☐ No |  |
| 1.1.3 | The cogeneration units must comply with the Low Voltage Directive (2014/35/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.4 | The cogeneration units must comply with the Electromagnetic Compatibility Directive Directive (2014/30/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (cogeneration units) 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 (cogeneration units), shall provide Manufacturer's Authorisation for supply of the Equipment (cogeneration units) 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 labor, parts, and transportation 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 | Please provide details |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Sample passport/quality certificate from the manufacturer for a product of similar (or higher) power and voltage class with technical characteristics. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of compliance with Ukrainian technical requirements. | ☐ Yes ☐ No |  |
| 1.9.3 | Example of the operating instructions (manual) for the product, including documentation on scheduled repairs for a product of similar power and voltage class, in Ukrainian language. | ☐ Yes ☐ No |  |
| 1.9.4 | Example of dimensional and installation drawings for a product of similar power and voltage class, control cabinet diagrams. | ☐ Yes ☐ No |  |
| 1.9.5 | A letter of guarantee from the Bidder stating that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.9.6 | Manufacturer's technical literature/catalogue, all confirming that the offered items comply with required specifications. | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.10.1 | All documentation required for on-site installation shall be included in the scope of delivery, listed in the specifications, labelled and packaged for transport. | ☐ Yes ☐ No |  |
| 1.10.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.10.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **The equipment must be a gas-piston cogeneration unit.** | ☐ Yes ☐ No |  |
| **2.3** | **The equipment must be equipped with: a gas piston engine equipped with all necessary systems, components, pipelines and power cables in accordance with the manufacturer's standard designs, ensuring reliable and uninterrupted operation of the engine in each of the provided operating modes, mounted together with the generator on a robust and vibration-dampened common frame for mounting both the engine and generator, designed to ensure structural integrity and ease of maintenance.** | ☐ Yes ☐ No |  |
| **2.4** | **The equipment shall be equipped with the necessary technological systems as listed below:** | ☐ Yes ☐ No |  |
| 2.4.1 | engine lubrication system, circulating under pressure, with free oil discharge into the track; | ☐ Yes ☐ No |  |
| 2.4.2 | gas supply system; | ☐ Yes ☐ No |  |
| 2.4.3 | set of required (mandatory) sensors; | ☐ Yes ☐ No |  |
| 2.4.4 | an electric starter motor and battery system for reliable engine startup; | ☐ Yes ☐ No |  |
| 2.4.5 | cooling tower that removes heat from the cooling circuit of the (process) mixture; | ☐ Yes ☐ No |  |
| 2.4.6 | a comprehensive cooling system including a radiator, cooling fans, coolant pumps, and all necessary coolant lines to maintain optimal engine temperatures during operation with emergency cooling tower that removes unused heat to operate in the absence of heat demand, removing excess cooling heat to ensure a stable plant output; | ☐ Yes ☐ No |  |
| 2.4.7 | the necessary pumping equipment for the cooling circuits; | ☐ Yes ☐ No |  |
| 2.4.8 | high-quality exhaust manifold and noise-suppressing silencer to reduce noise levels and manage exhaust gases efficiently; | ☐ Yes ☐ No |  |
| 2.4.9 | flue gas heat recovery system; | ☐ Yes ☐ No |  |
| 2.4.10 | an Engine Control Unit (ECU) to manage engine operation, including fuel injection, ignition timing, and engine diagnostics, with a user-friendly control panel with display screens to monitor and control engine and generator parameters, including start/stop functions, operational status, and fault indicators; | ☐ Yes ☐ No |  |
| 2.4.11 | exhaust gas recovery boiler for a gas piston plant; | ☐ Yes ☐ No |  |
| 2.4.12 | voltage generator: 0.4 kV | ☐ Yes ☐ No |  |
| 2.4.13 | gas inlet pressure - no more than 2.0 atm. | ☐ Yes ☐ No |  |
| **2.5** | **The equipment (cogeneration unit) must provide for the possibility of autonomous start-up (in the event of a power outage).** | ☐ Yes ☐ No |  |
| **2.6** | **The cogeneration plant must be capable of operating in both parallel with the network and in "island" mode (standalone operation). The system must seamlessly transition between these modes to ensure continuous power supply under all conditions.**  **In addition, the following components and requirements must be met:** | ☐ Yes ☐ No |  |
| 2.6.1 | Parallel Operation: The cogeneration plant must be fully compatible with grid connection and be able to synchronize with the network, sharing the load as required. | ☐ Yes ☐ No |  |
| 2.6.2 | Island Mode Operation: The plant must be capable of operating independently from the grid, providing reliable power in the event of a network failure. This mode should include automatic start-up and load management capabilities. | ☐ Yes ☐ No |  |
| 2.6.3 | Starting Batteries: The cogeneration plant must include starting batteries as mandatory components. These batteries should be of adequate capacity to ensure reliable engine start-up in all operating conditions, including during network outages. | ☐ Yes ☐ No |  |
| **2.7** | **The equipment (cogeneration unit) must be capable of autonomous operation during such power outages.** | ☐ Yes ☐ No |  |
| **2.8** | **The equipment (cogeneration unit) must ensure that the cos φ value is maintained in the range of 1.0-0.90 at the balance point when operating in parallel with the general network.** | ☐ Yes ☐ No |  |
| **2.9** | **The equipment (cogeneration unit) must provide the function of automatic voltage regulation at a given level.** | ☐ Yes ☐ No |  |
| **2.10** | **The equipment (cogeneration unit) must provide power control of flows to and from the network.** | ☐ Yes ☐ No |  |
| **2.11** | **The electrical power output must be at least as specified in the table below.** | ☐ Yes ☐ No |  |
| **2.12** | **Emission Control: Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%.** | ☐ Yes ☐ No |  |
| 2.12.1 | Emission control systems such as catalytic converters to reduce harmful emissions in compliance with environmental regulations. | ☐ Yes ☐ No |  |
| 2.12.2 | Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%. | ☐ Yes ☐ No |  |
| **2.13** | **The cogeneration must be delivered in a container.** | ☐ Yes ☐ No |  |
| **2.14** | **Thermal efficiency minimum 36%.** | ☐ Yes ☐ No |  |
| **2.15** | **The gas generators must demonstrate high fuel efficiency, with a target thermal efficiency of at least 36% and an overall efficiency (electrical and thermal) of at least 80%. Efficiency data and testing documentation must be provided. Generators achieving higher efficiencies will be given preference.** | ☐ Yes ☐ No |  |
| **2.16** | **Technical requirements for the generator** | ☐ Yes ☐ No |  |
| 2.16.1 | Voltage, kV: 0.4 | ☐ Yes ☐ No |  |
| 2.16.2 | Current frequency, Hz: 50. | ☐ Yes ☐ No |  |
| 2.16.3 | Insulation class: H. | ☐ Yes ☐ No |  |
| 2.16.4 | Pre-load heating class: F. | ☐ Yes ☐ No |  |
| 2.16.5 | Maximum environmental temperature: 40 C. | ☐ Yes ☐ No |  |
| 2.16.6 | Winding temperature sensors: available. | ☐ Yes ☐ No |  |
| **2.17** | **Requirements to the management and control system** | ☐ Yes ☐ No |  |
| 2.17.1 | automatic engine speed control; | ☐ Yes ☐ No |  |
| 2.17.2 | automatic temperature control in cooling and lubrication systems; | ☐ Yes ☐ No |  |
| 2.17.3 | automatic regulation of the generator voltage; | ☐ Yes ☐ No |  |
| 2.17.4 | automatic recharging of batteries; | ☐ Yes ☐ No |  |
| 2.17.5 | displaying the values of the monitored engine-generator parameters on the local engine dashboard (for engine operation parameters) and on the generator control cabinet panel (for electrical parameters); | ☐ Yes ☐ No |  |
| 2.17.6 | autonomous operation in case of power failure from interface protection systems; | ☐ Yes ☐ No |  |
| 2.17.7 | smooth voltage regulation in the range from -10% to +5%; | ☐ Yes ☐ No |  |
| 2.17.8 | control of the engine oil pump; | ☐ Yes ☐ No |  |
| 2.17.9 | power supply and control of the engine speed controller; | ☐ Yes ☐ No |  |
| 2.17.10 | engine start and stop control; | ☐ Yes ☐ No |  |
| 2.17.11 | control of the engine starting system; | ☐ Yes ☐ No |  |
| 2.17.12 | engine gas valve control; | ☐ Yes ☐ No |  |
| 2.17.13 | automatic emergency stop with disconnection and protection of the following parameters (with a signal from the control cabinet to disconnect the generator switch): | ☐ Yes ☐ No |  |
| *2.17.13.1* | *overload exceeding 10% of the nominal;* | ☐ Yes ☐ No |  |
| *2.17.13.2* | *at reverse power;* | ☐ Yes ☐ No |  |
| *2.17.13.3* | *ignition malfunction;* | ☐ Yes ☐ No |  |
| *2.17.13.4* | *maximum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.5* | *minimum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.6* | *low gas pressure;* | ☐ Yes ☐ No |  |
| *2.17.13.7* | *gas in the room;* | ☐ Yes ☐ No |  |
| *2.17.13.8* | *water pressure in the internal circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.9* | *water pressure in the external circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.10* | *oil pressure after the filter at the engine inlet;* | ☐ Yes ☐ No |  |
| *2.17.13.11* | *water temperature at the engine outlet;* | ☐ Yes ☐ No |  |
| *2.17.13.12* | *oil temperature at the engine inlet.* | ☐ Yes ☐ No |  |
| 2.17.14 | The control cabinet and software must ensure the following: | ☐ Yes ☐ No |  |
| *2.17.14.1* | *display of all engine-generator parameters on the panel and screen in the boiler house;* | ☐ Yes ☐ No |  |
| *2.17.14.2* | *the possibility of emergency stop of the engine-generator from the control panel in the operator's room;* | ☐ Yes ☐ No |  |
| *2.17.14.3* | *automatic connection of the generator to the grid using a synchroniser;* | ☐ Yes ☐ No |  |
| *2.17.14.4* | *warning and alarm signals when the parameters go beyond the set limits;* | ☐ Yes ☐ No |  |
| *2.17.15* | *The control system must be capable of recording and storing key operational parameters and emergency signals in a data storage system. The parameters identified in clauses 2.17.15.1 to 2.17.15.3 must be logged and archived, with data retention for a minimum period of 1 month:* | ☐ Yes ☐ No |  |
| *2.17.15.1* | *Operational Parameters to be Logged:*  *Electrical Energy Output: Amount of released electrical energy.*  *Engine Parameters:*  *Engine mill (operational state of the engine).*  *Coolant temperature.*  *Engine wrap (operational state of engine components).*  *Battery: Battery voltage.*  *Controller: Controller mode.*  *Generator Parameters:*  *Generator voltage (L1, L2, L3).*  *Generator frequency.*  *Generator current (L1, L2, L3).*  *Generator tension coefficient.*  *Generator pressure (active).*  *Reactive power of the generator.*  *Generator is operating under load (indication of generator load status).*  *Miscellaneous:*  *Press coolant.*  *Olive press (pressure status).*  *Tightness of the hem and hem tightness coefficient.*  *Active power setting.*  *Engine operating hours.*  *Number of starts.* | ☐ Yes ☐ No |  |
| *2.17.15.2* | *Archived Parameters (Mandatory) to be Logged:*  *Engine Operating Hours.*  *Number of Starts.*  *Electrical Energy Output.*  *Generator Voltage (per phase).*  *Generator Frequency.*  *Generator Current (per phase).*  *Press Coolant.*  *Olive Press.* | ☐ Yes ☐ No |  |
| *2.17.15.3* | *General Emergency Signals to be Logged:*  *Emergency signal of the KSU (based on designated signal parameters).*  *Press coolant lower than normal.*  *Engine coolant temperature higher than normal.*  *Engine wrap higher/lower than normal.*  *Battery voltage lower than normal.*  *Generator frequency abnormal.*  *Generator voltage abnormal.* | ☐ Yes ☐ No |  |
| 2.17.16 | System requirements for air start - a filter element must be provided in the combustion air supply. | ☐ Yes ☐ No |  |
| 2.17.17 | Requirements for the cooling system - flange connections for water inlet and outlet from the cooling jacket, flange connections for inlet and outlet ports must be available. | ☐ Yes ☐ No |  |
| **2.18** | **Requirements for the Equipment Container** | ☐ Yes ☐ No |  |
| 2.18.1 | The container construction shall ensure safe transportation and installation of the Equipment (the container shall not allow damage to the Equipment during transportation and installation). The container construction shall ensure the maintenance of the established microclimate during the operation of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.2 | The container should have a rigid metal structure made of high-quality steel sheets with anti-corrosion treatment and painting, internal thermal insulation of walls and ceiling, as well as internal lining of the engine room with perforated steel sheets. | ☐ Yes ☐ No |  |
| 2.18.3 | The container must allow fulfilment of all requirements necessary for the operation (work) of the Equipment (cogeneration unit) in all provided modes. The container construction shall provide the possibility of internal inspection of the Equipment and access to the main elements of the Equipment for regular maintenance. | ☐ Yes ☐ No |  |
| 2.18.4 | The container shall have all necessary pipework and internal cable connections provided and installed within the container to ensure standard procedures and operation of the Equipment in each intended mode of operation. | ☐ Yes ☐ No |  |
| 2.18.5 | The Container shall have ventilation windows that are equipped with special protective grilles on the outside to protect the internal Equipment from atmospheric precipitation and foreign objects. | ☐ Yes ☐ No |  |
| 2.18.6 | The container shall have doors on each side of the container with handles for opening from the outside and locks to prevent unauthorised access.. | ☐ Yes ☐ No |  |
| 2.18.7 | The container is equipped with 220 V internal lighting lamps from an external power supply via a panel or auxiliary service panel. | ☐ Yes ☐ No |  |
| 2.18.8 | The container must be equipped with 220V (10A) sockets, which are installed in the container from an external power source through a panel or auxiliary service panel for connecting tools. The sockets are located on both sides of the container and next to the control cabinet and distribution board. | ☐ Yes ☐ No |  |
| 2.18.9 | Inside the container: on the outer wall of the container there are pipelines for fuel supply from the gas inlet flange and other necessary elements to ensure gas supply. | ☐ Yes ☐ No |  |
| 2.18.10 | The engine cooling system shall be equipped with all necessary components, pipework and power cables to ensure reliable and uninterrupted engine operation in each envisaged operating mode of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.11 | The exhaust system of the engine shall be equipped with a noise silencer and all necessary components and pipework to ensure reliable and trouble-free operation of the engine in each of the envisaged operating modes of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.12 | The container must have a built-in gas monitoring system using modern analysers, light and sound sensors, electromagnetic gas supply valves and methane sensors. The system continuously (continuously) monitors the gas level inside the container. | ☐ Yes ☐ No |  |
| 2.18.13 | The container must have a fire alarm system. | ☐ Yes ☐ No |  |
| 2.18.14 | Inside the container: a common built-in grounding bus with 2 points shall be provided for all major elements of the Equipment (cogeneration plant) (i.e. generator, motor, panels, lights, sockets) for further connection to the grounding system on site to the outer frame of the container (diagonally on both sides). | ☐ Yes ☐ No |  |
| 2.18.15 | The container construction should include a port for connecting external power, control and alarm cables. | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** | ☐ Yes ☐ No |  |
| 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 |  |
| 2.19.3 | order number, | ☐ Yes ☐ No |  |
| 2.19.4 | brand name, | ☐ Yes ☐ No |  |
| 2.19.5 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.6 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.7 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general requirements** | ☐ Yes ☐ No |  |
| 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 |
| 3.3 | Spare Parts and Consumables: Bidder must provide a list of recommended spare parts and consumables for the first 2 years of operation, including costs. | ☐ Yes ☐ No |  |
| 3.4 | Performance Testing and Acceptance Criteria: Bidder must provide performance testing upon delivery and outline acceptance criteria, including who will conduct the testing and how results will be documented. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No |  |
| 3.5 | Bidder must provide a Training proposal for the personnel who will operate and maintain the cogeneration units, including the scope and duration of the training. Training must be provided in on-line format in Ukrainian language. The final program of the training must be agreed with the beneficiary before the beginning of the training. Cost of the training must be included in the cost of the units. | ☐ Yes ☐ No |  |

**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 (one batch should contain a minimum one full item (full q-ty required for item) 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 3. Cogeneration gas unit 700-750 kW**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 3** | **Cogeneration gas unit 700 - 750 kW - 2 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **Cogeneration units must be manufactured in accordance with the requirements of regulatory documents in force in Ukraine, including state standards (DSTU), technical specifications (TS), ISO, and other standards established by current legislation. The producer must comply with the following standards, with confirmation of compliance included in the equipment’s passport/manual:** | ☐ Yes ☐ No |  |
| 1.1.1 | The manufacturer is certified under ISO 9001:2015 for the design, production, and maintenance of internal combustion engines, cogeneration units, power plants, and associated spare parts. Include ISO 9001:2015 certification details in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.2 | The electrical equipment of the cogeneration units must comply with DSTU EN 60204-1:2015. Certificate of compliance with DSTU EN 60204-1:2015 must be provided. | ☐ Yes ☐ No |  |
| 1.1.3 | The cogeneration units must comply with the Low Voltage Directive (2014/35/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.4 | The cogeneration units must comply with the Electromagnetic Compatibility Directive Directive (2014/30/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (cogeneration units) 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 (cogeneration units), shall provide Manufacturer's Authorisation for supply of the Equipment (cogeneration units) 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 labor, parts, and transportation 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 | Please provide details |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Sample passport/quality certificate from the manufacturer for a product of similar (or higher) power and voltage class with technical characteristics. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of compliance with Ukrainian technical requirements. | ☐ Yes ☐ No |  |
| 1.9.3 | Example of the operating instructions (manual) for the product, including documentation on scheduled repairs for a product of similar power and voltage class, in Ukrainian language. | ☐ Yes ☐ No |  |
| 1.9.4 | Example of dimensional and installation drawings for a product of similar power and voltage class, control cabinet diagrams. | ☐ Yes ☐ No |  |
| 1.9.5 | A letter of guarantee from the Bidder stating that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.9.6 | Manufacturer's technical literature/catalogue, all confirming that the offered items comply with required specifications. | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.10.1 | All documentation required for on-site installation shall be included in the scope of delivery, listed in the specifications, labelled and packaged for transport. | ☐ Yes ☐ No |  |
| 1.10.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.10.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **The equipment must be a gas-piston cogeneration unit.** | ☐ Yes ☐ No |  |
| **2.3** | **The equipment must be equipped with: a gas piston engine equipped with all necessary systems, components, pipelines and power cables in accordance with the manufacturer's standard designs, ensuring reliable and uninterrupted operation of the engine in each of the provided operating modes, mounted together with the generator on a robust and vibration-dampened common frame for mounting both the engine and generator, designed to ensure structural integrity and ease of maintenance.** | ☐ Yes ☐ No |  |
| **2.4** | **The equipment shall be equipped with the necessary technological systems as listed below:** | ☐ Yes ☐ No |  |
| 2.4.1 | engine lubrication system, circulating under pressure, with free oil discharge into the track; | ☐ Yes ☐ No |  |
| 2.4.2 | gas supply system; | ☐ Yes ☐ No |  |
| 2.4.3 | set of required (mandatory) sensors; | ☐ Yes ☐ No |  |
| 2.4.4 | an electric starter motor and battery system for reliable engine startup; | ☐ Yes ☐ No |  |
| 2.4.5 | cooling tower that removes heat from the cooling circuit of the (process) mixture; | ☐ Yes ☐ No |  |
| 2.4.6 | a comprehensive cooling system including a radiator, cooling fans, coolant pumps, and all necessary coolant lines to maintain optimal engine temperatures during operation with emergency cooling tower that removes unused heat to operate in the absence of heat demand, removing excess cooling heat to ensure a stable plant output; | ☐ Yes ☐ No |  |
| 2.4.7 | the necessary pumping equipment for the cooling circuits; | ☐ Yes ☐ No |  |
| 2.4.8 | high-quality exhaust manifold and noise-suppressing silencer to reduce noise levels and manage exhaust gases efficiently; | ☐ Yes ☐ No |  |
| 2.4.9 | flue gas heat recovery system; | ☐ Yes ☐ No |  |
| 2.4.10 | an Engine Control Unit (ECU) to manage engine operation, including fuel injection, ignition timing, and engine diagnostics, with a user-friendly control panel with display screens to monitor and control engine and generator parameters, including start/stop functions, operational status, and fault indicators; | ☐ Yes ☐ No |  |
| 2.4.11 | exhaust gas recovery boiler for a gas piston plant; | ☐ Yes ☐ No |  |
| 2.4.12 | voltage generator: 0.4 kV | ☐ Yes ☐ No |  |
| 2.4.13 | gas inlet pressure - no more than 2.0 atm. | ☐ Yes ☐ No |  |
| **2.5** | **The equipment (cogeneration unit) must provide for the possibility of autonomous start-up (in the event of a power outage).** | ☐ Yes ☐ No |  |
| **2.6** | **The cogeneration plant must be capable of operating in both parallel with the network and in "island" mode (standalone operation). The system must seamlessly transition between these modes to ensure continuous power supply under all conditions.**  **In addition, the following components and requirements must be met:** | ☐ Yes ☐ No |  |
| 2.6.1 | Parallel Operation: The cogeneration plant must be fully compatible with grid connection and be able to synchronize with the network, sharing the load as required. | ☐ Yes ☐ No |  |
| 2.6.2 | Island Mode Operation: The plant must be capable of operating independently from the grid, providing reliable power in the event of a network failure. This mode should include automatic start-up and load management capabilities. | ☐ Yes ☐ No |  |
| 2.6.3 | Starting Batteries: The cogeneration plant must include starting batteries as mandatory components. These batteries should be of adequate capacity to ensure reliable engine start-up in all operating conditions, including during network outages. | ☐ Yes ☐ No |  |
| **2.7** | **The equipment (cogeneration unit) must be capable of autonomous operation during such power outages.** | ☐ Yes ☐ No |  |
| **2.8** | **The equipment (cogeneration unit) must ensure that the cos φ value is maintained in the range of 1.0-0.90 at the balance point when operating in parallel with the general network.** | ☐ Yes ☐ No |  |
| **2.9** | **The equipment (cogeneration unit) must provide the function of automatic voltage regulation at a given level.** | ☐ Yes ☐ No |  |
| **2.10** | **The equipment (cogeneration unit) must provide power control of flows to and from the network.** | ☐ Yes ☐ No |  |
| **2.11** | **The electrical power output must be at least as specified in the table below.** | ☐ Yes ☐ No |  |
| **2.12** | **Emission Control: Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%.** | ☐ Yes ☐ No |  |
| 2.12.1 | Emission control systems such as catalytic converters to reduce harmful emissions in compliance with environmental regulations. | ☐ Yes ☐ No |  |
| 2.12.2 | Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%. | ☐ Yes ☐ No |  |
| **2.13** | **The cogeneration must be delivered in a container.** | ☐ Yes ☐ No |  |
| **2.14** | **Thermal efficiency minimum 36%.** | ☐ Yes ☐ No |  |
| **2.15** | **The gas generators must demonstrate high fuel efficiency, with a target thermal efficiency of at least 36% and an overall efficiency (electrical and thermal) of at least 80%. Efficiency data and testing documentation must be provided. Generators achieving higher efficiencies will be given preference.** | ☐ Yes ☐ No |  |
| **2.16** | **Technical requirements for the generator** | ☐ Yes ☐ No |  |
| 2.16.1 | Voltage, kV: 0.4 | ☐ Yes ☐ No |  |
| 2.16.2 | Current frequency, Hz: 50. | ☐ Yes ☐ No |  |
| 2.16.3 | Insulation class: H. | ☐ Yes ☐ No |  |
| 2.16.4 | Pre-load heating class: F. | ☐ Yes ☐ No |  |
| 2.16.5 | Maximum environmental temperature: 40 C. | ☐ Yes ☐ No |  |
| 2.16.6 | Winding temperature sensors: available. | ☐ Yes ☐ No |  |
| **2.17** | **Requirements to the management and control system** | ☐ Yes ☐ No |  |
| 2.17.1 | automatic engine speed control; | ☐ Yes ☐ No |  |
| 2.17.2 | automatic temperature control in cooling and lubrication systems; | ☐ Yes ☐ No |  |
| 2.17.3 | automatic regulation of the generator voltage; | ☐ Yes ☐ No |  |
| 2.17.4 | automatic recharging of batteries; | ☐ Yes ☐ No |  |
| 2.17.5 | displaying the values of the monitored engine-generator parameters on the local engine dashboard (for engine operation parameters) and on the generator control cabinet panel (for electrical parameters); | ☐ Yes ☐ No |  |
| 2.17.6 | autonomous operation in case of power failure from interface protection systems; | ☐ Yes ☐ No |  |
| 2.17.7 | smooth voltage regulation in the range from -10% to +5%; | ☐ Yes ☐ No |  |
| 2.17.8 | control of the engine oil pump; | ☐ Yes ☐ No |  |
| 2.17.9 | power supply and control of the engine speed controller; | ☐ Yes ☐ No |  |
| 2.17.10 | engine start and stop control; | ☐ Yes ☐ No |  |
| 2.17.11 | control of the engine starting system; | ☐ Yes ☐ No |  |
| 2.17.12 | engine gas valve control; | ☐ Yes ☐ No |  |
| 2.17.13 | automatic emergency stop with disconnection and protection of the following parameters (with a signal from the control cabinet to disconnect the generator switch): | ☐ Yes ☐ No |  |
| *2.17.13.1* | *overload exceeding 10% of the nominal;* | ☐ Yes ☐ No |  |
| *2.17.13.2* | *at reverse power;* | ☐ Yes ☐ No |  |
| *2.17.13.3* | *ignition malfunction;* | ☐ Yes ☐ No |  |
| *2.17.13.4* | *maximum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.5* | *minimum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.6* | *low gas pressure;* | ☐ Yes ☐ No |  |
| *2.17.13.7* | *gas in the room;* | ☐ Yes ☐ No |  |
| *2.17.13.8* | *water pressure in the internal circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.9* | *water pressure in the external circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.10* | *oil pressure after the filter at the engine inlet;* | ☐ Yes ☐ No |  |
| *2.17.13.11* | *water temperature at the engine outlet;* | ☐ Yes ☐ No |  |
| *2.17.13.12* | *oil temperature at the engine inlet.* | ☐ Yes ☐ No |  |
| 2.17.14 | The control cabinet and software must ensure the following: | ☐ Yes ☐ No |  |
| *2.17.14.1* | *display of all engine-generator parameters on the panel and screen in the boiler house;* | ☐ Yes ☐ No |  |
| *2.17.14.2* | *the possibility of emergency stop of the engine-generator from the control panel in the operator's room;* | ☐ Yes ☐ No |  |
| *2.17.14.3* | *automatic connection of the generator to the grid using a synchroniser;* | ☐ Yes ☐ No |  |
| *2.17.14.4* | *warning and alarm signals when the parameters go beyond the set limits;* | ☐ Yes ☐ No |  |
| *2.17.15* | *The control system must be capable of recording and storing key operational parameters and emergency signals in a data storage system. The parameters identified in clauses 2.17.15.1 to 2.17.15.3 must be logged and archived, with data retention for a minimum period of 1 month:* | ☐ Yes ☐ No |  |
| *2.17.15.1* | *Operational Parameters to be Logged:*  *Electrical Energy Output: Amount of released electrical energy.*  *Engine Parameters:*  *Engine mill (operational state of the engine).*  *Coolant temperature.*  *Engine wrap (operational state of engine components).*  *Battery: Battery voltage.*  *Controller: Controller mode.*  *Generator Parameters:*  *Generator voltage (L1, L2, L3).*  *Generator frequency.*  *Generator current (L1, L2, L3).*  *Generator tension coefficient.*  *Generator pressure (active).*  *Reactive power of the generator.*  *Generator is operating under load (indication of generator load status).*  *Miscellaneous:*  *Press coolant.*  *Olive press (pressure status).*  *Tightness of the hem and hem tightness coefficient.*  *Active power setting.*  *Engine operating hours.*  *Number of starts.* | ☐ Yes ☐ No |  |
| *2.17.15.2* | *Archived Parameters (Mandatory) to be Logged:*  *Engine Operating Hours.*  *Number of Starts.*  *Electrical Energy Output.*  *Generator Voltage (per phase).*  *Generator Frequency.*  *Generator Current (per phase).*  *Press Coolant.*  *Olive Press.* | ☐ Yes ☐ No |  |
| *2.17.15.3* | *General Emergency Signals to be Logged:*  *Emergency signal of the KSU (based on designated signal parameters).*  *Press coolant lower than normal.*  *Engine coolant temperature higher than normal.*  *Engine wrap higher/lower than normal.*  *Battery voltage lower than normal.*  *Generator frequency abnormal.*  *Generator voltage abnormal.* | ☐ Yes ☐ No |  |
| 2.17.16 | System requirements for air start - a filter element must be provided in the combustion air supply. | ☐ Yes ☐ No |  |
| 2.17.17 | Requirements for the cooling system - flange connections for water inlet and outlet from the cooling jacket, flange connections for inlet and outlet ports must be available. | ☐ Yes ☐ No |  |
| **2.18** | **Requirements for the Equipment Container** | ☐ Yes ☐ No |  |
| 2.18.1 | The container construction shall ensure safe transportation and installation of the Equipment (the container shall not allow damage to the Equipment during transportation and installation). The container construction shall ensure the maintenance of the established microclimate during the operation of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.2 | The container should have a rigid metal structure made of high-quality steel sheets with anti-corrosion treatment and painting, internal thermal insulation of walls and ceiling, as well as internal lining of the engine room with perforated steel sheets. | ☐ Yes ☐ No |  |
| 2.18.3 | The container must allow fulfilment of all requirements necessary for the operation (work) of the Equipment (cogeneration unit) in all provided modes. The container construction shall provide the possibility of internal inspection of the Equipment and access to the main elements of the Equipment for regular maintenance. | ☐ Yes ☐ No |  |
| 2.18.4 | The container shall have all necessary pipework and internal cable connections provided and installed within the container to ensure standard procedures and operation of the Equipment in each intended mode of operation. | ☐ Yes ☐ No |  |
| 2.18.5 | The Container shall have ventilation windows that are equipped with special protective grilles on the outside to protect the internal Equipment from atmospheric precipitation and foreign objects. | ☐ Yes ☐ No |  |
| 2.18.6 | The container shall have doors on each side of the container with handles for opening from the outside and locks to prevent unauthorised access.. | ☐ Yes ☐ No |  |
| 2.18.7 | The container is equipped with 220 V internal lighting lamps from an external power supply via a panel or auxiliary service panel. | ☐ Yes ☐ No |  |
| 2.18.8 | The container must be equipped with 220V (10A) sockets, which are installed in the container from an external power source through a panel or auxiliary service panel for connecting tools. The sockets are located on both sides of the container and next to the control cabinet and distribution board. | ☐ Yes ☐ No |  |
| 2.18.9 | Inside the container: on the outer wall of the container there are pipelines for fuel supply from the gas inlet flange and other necessary elements to ensure gas supply. | ☐ Yes ☐ No |  |
| 2.18.10 | The engine cooling system shall be equipped with all necessary components, pipework and power cables to ensure reliable and uninterrupted engine operation in each envisaged operating mode of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.11 | The exhaust system of the engine shall be equipped with a noise silencer and all necessary components and pipework to ensure reliable and trouble-free operation of the engine in each of the envisaged operating modes of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.12 | The container must have a built-in gas monitoring system using modern analysers, light and sound sensors, electromagnetic gas supply valves and methane sensors. The system continuously (continuously) monitors the gas level inside the container. | ☐ Yes ☐ No |  |
| 2.18.13 | The container must have a fire alarm system. | ☐ Yes ☐ No |  |
| 2.18.14 | Inside the container: a common built-in grounding bus with 2 points shall be provided for all major elements of the Equipment (cogeneration plant) (i.e. generator, motor, panels, lights, sockets) for further connection to the grounding system on site to the outer frame of the container (diagonally on both sides). | ☐ Yes ☐ No |  |
| 2.18.15 | The container construction should include a port for connecting external power, control and alarm cables. | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** | ☐ Yes ☐ No |  |
| 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 |  |
| 2.19.3 | order number, | ☐ Yes ☐ No |  |
| 2.19.4 | brand name, | ☐ Yes ☐ No |  |
| 2.19.5 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.6 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.7 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general requirements** | ☐ Yes ☐ No |  |
| 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 |
| 3.3 | Spare Parts and Consumables: Bidder must provide a list of recommended spare parts and consumables for the first 2 years of operation, including costs. | ☐ Yes ☐ No |  |
| 3.4 | Performance Testing and Acceptance Criteria: Bidder must provide performance testing upon delivery and outline acceptance criteria, including who will conduct the testing and how results will be documented. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No |  |
| 3.5 | Bidder must provide a Training proposal for the personnel who will operate and maintain the cogeneration units, including the scope and duration of the training. Training must be provided in on-line format in Ukrainian language. The final program of the training must be agreed with the beneficiary before the beginning of the training. Cost of the training must be included in the cost of the units. | ☐ Yes ☐ No |  |

**C.3. Delivery requirements for Lot 3**

| **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 a minimum one full item (full q-ty required for item) 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 4. Cogeneration gas unit 1500-1560 kW**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 4** | **Cogeneration gas unit 1500 - 1560 kW - 3 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **The required CGUs' will be installed on 1 site, should be from 1 manufacturer and should include appropriate synchronization panels to connect units between each other. Cogeneration units must be manufactured in accordance with the requirements of regulatory documents in force in Ukraine, including state standards (DSTU), technical specifications (TS), ISO, and other standards established by current legislation. The producer must comply with the following standards, with confirmation of compliance included in the equipment’s passport/manual:** | ☐ Yes ☐ No |  |
| 1.1.1 | The manufacturer is certified under ISO 9001:2015 for the design, production, and maintenance of internal combustion engines, cogeneration units, power plants, and associated spare parts. Include ISO 9001:2015 certification details in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.2 | The electrical equipment of the cogeneration units must comply with DSTU EN 60204-1:2015. Certificate of compliance with DSTU EN 60204-1:2015 must be provided. | ☐ Yes ☐ No |  |
| 1.1.3 | The cogeneration units must comply with the Low Voltage Directive (2014/35/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.4 | The cogeneration units must comply with the Electromagnetic Compatibility Directive Directive (2014/30/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (cogeneration units) 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 (cogeneration units), shall provide Manufacturer's Authorisation for supply of the Equipment (cogeneration units) 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 labor, parts, and transportation 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 | Please provide details |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Sample passport/quality certificate from the manufacturer for a product of similar (or higher) power and voltage class with technical characteristics. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of compliance with Ukrainian technical requirements. | ☐ Yes ☐ No |  |
| 1.9.3 | Example of the operating instructions (manual) for the product, including documentation on scheduled repairs for a product of similar power and voltage class, in Ukrainian language. | ☐ Yes ☐ No |  |
| 1.9.4 | Example of dimensional and installation drawings for a product of similar power and voltage class, control cabinet diagrams. | ☐ Yes ☐ No |  |
| 1.9.5 | A letter of guarantee from the Bidder stating that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.9.6 | Manufacturer's technical literature/catalogue, all confirming that the offered items comply with required specifications. | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.10.1 | All documentation required for on-site installation shall be included in the scope of delivery, listed in the specifications, labelled and packaged for transport. | ☐ Yes ☐ No |  |
| 1.10.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.10.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **The equipment must be a gas-piston cogeneration unit.** | ☐ Yes ☐ No |  |
| **2.3** | **The equipment must be equipped with: a gas piston engine equipped with all necessary systems, components, pipelines and power cables in accordance with the manufacturer's standard designs, ensuring reliable and uninterrupted operation of the engine in each of the provided operating modes, mounted together with the generator on a robust and vibration-dampened common frame for mounting both the engine and generator, designed to ensure structural integrity and ease of maintenance.** | ☐ Yes ☐ No |  |
| **2.4** | **The equipment shall be equipped with the necessary technological systems as listed below:** | ☐ Yes ☐ No |  |
| 2.4.1 | engine lubrication system, circulating under pressure, with free oil discharge into the track; | ☐ Yes ☐ No |  |
| 2.4.2 | gas supply system; | ☐ Yes ☐ No |  |
| 2.4.3 | set of required (mandatory) sensors; | ☐ Yes ☐ No |  |
| 2.4.4 | an electric starter motor and battery system for reliable engine startup; | ☐ Yes ☐ No |  |
| 2.4.5 | cooling tower that removes heat from the cooling circuit of the (process) mixture; | ☐ Yes ☐ No |  |
| 2.4.6 | a comprehensive cooling system including a radiator, cooling fans, coolant pumps, and all necessary coolant lines to maintain optimal engine temperatures during operation with emergency cooling tower that removes unused heat to operate in the absence of heat demand, removing excess cooling heat to ensure a stable plant output; | ☐ Yes ☐ No |  |
| 2.4.7 | the necessary pumping equipment for the cooling circuits; | ☐ Yes ☐ No |  |
| 2.4.8 | high-quality exhaust manifold and noise-suppressing silencer to reduce noise levels and manage exhaust gases efficiently; | ☐ Yes ☐ No |  |
| 2.4.9 | flue gas heat recovery system; | ☐ Yes ☐ No |  |
| 2.4.10 | an Engine Control Unit (ECU) to manage engine operation, including fuel injection, ignition timing, and engine diagnostics, with a user-friendly control panel with display screens to monitor and control engine and generator parameters, including start/stop functions, operational status, and fault indicators; | ☐ Yes ☐ No |  |
| 2.4.11 | exhaust gas recovery boiler for a gas piston plant; | ☐ Yes ☐ No |  |
| 2.4.12 | voltage generator: 6.3 kV | ☐ Yes ☐ No |  |
| 2.4.13 | gas inlet pressure - no more than 2.0 atm. | ☐ Yes ☐ No |  |
| **2.5** | **The equipment (cogeneration unit) must provide for the possibility of autonomous start-up (in the event of a power outage).** | ☐ Yes ☐ No |  |
| **2.6** | **The cogeneration plant must be capable of operating in both parallel with the network and in "island" mode (standalone operation). The system must seamlessly transition between these modes to ensure continuous power supply under all conditions.**  **In addition, the following components and requirements must be met:** | ☐ Yes ☐ No |  |
| 2.6.1 | Parallel Operation: The cogeneration plant must be fully compatible with grid connection and be able to synchronize with the network, sharing the load as required. | ☐ Yes ☐ No |  |
| 2.6.2 | Island Mode Operation: The plant must be capable of operating independently from the grid, providing reliable power in the event of a network failure. This mode should include automatic start-up and load management capabilities. | ☐ Yes ☐ No |  |
| 2.6.3 | Starting Batteries: The cogeneration plant must include starting batteries as mandatory components. These batteries should be of adequate capacity to ensure reliable engine start-up in all operating conditions, including during network outages. | ☐ Yes ☐ No |  |
| **2.7** | **The equipment (cogeneration unit) must be capable of autonomous operation during such power outages.** | ☐ Yes ☐ No |  |
| **2.8** | **The equipment (cogeneration unit) must ensure that the cos φ value is maintained in the range of 1.0-0.90 at the balance point when operating in parallel with the general network.** | ☐ Yes ☐ No |  |
| **2.9** | **The equipment (cogeneration unit) must provide the function of automatic voltage regulation at a given level.** | ☐ Yes ☐ No |  |
| **2.10** | **The equipment (cogeneration unit) must provide power control of flows to and from the network.** | ☐ Yes ☐ No |  |
| **2.11** | **The electrical power output must be at least as specified in the table below.** | ☐ Yes ☐ No |  |
| **2.12** | **Emission Control: Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%.** | ☐ Yes ☐ No |  |
| 2.12.1 | Emission control systems such as catalytic converters to reduce harmful emissions in compliance with environmental regulations. | ☐ Yes ☐ No |  |
| 2.12.2 | Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%. | ☐ Yes ☐ No |  |
| **2.13** | **The cogeneration must be delivered in a container.** | ☐ Yes ☐ No |  |
| **2.14** | **Thermal efficiency minimum 36%.** | ☐ Yes ☐ No |  |
| **2.15** | **The gas generators must demonstrate high fuel efficiency, with a target thermal efficiency of at least 36% and an overall efficiency (electrical and thermal) of at least 80%. Efficiency data and testing documentation must be provided. Generators achieving higher efficiencies will be given preference.** | ☐ Yes ☐ No |  |
| **2.16** | **Technical requirements for the generator** | ☐ Yes ☐ No |  |
| 2.16.1 | Voltage, kV: 6.3 | ☐ Yes ☐ No |  |
| 2.16.2 | Current frequency, Hz: 50. | ☐ Yes ☐ No |  |
| 2.16.3 | Insulation class: H. | ☐ Yes ☐ No |  |
| 2.16.4 | Pre-load heating class: F. | ☐ Yes ☐ No |  |
| 2.16.5 | Maximum environmental temperature: 40 C. | ☐ Yes ☐ No |  |
| 2.16.6 | Winding temperature sensors: available. | ☐ Yes ☐ No |  |
| **2.17** | **Requirements to the management and control system** | ☐ Yes ☐ No |  |
| 2.17.1 | automatic engine speed control; | ☐ Yes ☐ No |  |
| 2.17.2 | automatic temperature control in cooling and lubrication systems; | ☐ Yes ☐ No |  |
| 2.17.3 | automatic regulation of the generator voltage; | ☐ Yes ☐ No |  |
| 2.17.4 | automatic recharging of batteries; | ☐ Yes ☐ No |  |
| 2.17.5 | displaying the values of the monitored engine-generator parameters on the local engine dashboard (for engine operation parameters) and on the generator control cabinet panel (for electrical parameters); | ☐ Yes ☐ No |  |
| 2.17.6 | autonomous operation in case of power failure from interface protection systems; | ☐ Yes ☐ No |  |
| 2.17.7 | smooth voltage regulation in the range from -10% to +5%; | ☐ Yes ☐ No |  |
| 2.17.8 | control of the engine oil pump; | ☐ Yes ☐ No |  |
| 2.17.9 | power supply and control of the engine speed controller; | ☐ Yes ☐ No |  |
| 2.17.10 | engine start and stop control; | ☐ Yes ☐ No |  |
| 2.17.11 | control of the engine starting system; | ☐ Yes ☐ No |  |
| 2.17.12 | engine gas valve control; | ☐ Yes ☐ No |  |
| 2.17.13 | automatic emergency stop with disconnection and protection of the following parameters (with a signal from the control cabinet to disconnect the generator switch): | ☐ Yes ☐ No |  |
| *2.17.13.1* | *overload exceeding 10% of the nominal;* | ☐ Yes ☐ No |  |
| *2.17.13.2* | *at reverse power;* | ☐ Yes ☐ No |  |
| *2.17.13.3* | *ignition malfunction;* | ☐ Yes ☐ No |  |
| *2.17.13.4* | *maximum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.5* | *minimum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.6* | *low gas pressure;* | ☐ Yes ☐ No |  |
| *2.17.13.7* | *gas in the room;* | ☐ Yes ☐ No |  |
| *2.17.13.8* | *water pressure in the internal circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.9* | *water pressure in the external circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.10* | *oil pressure after the filter at the engine inlet;* | ☐ Yes ☐ No |  |
| *2.17.13.11* | *water temperature at the engine outlet;* | ☐ Yes ☐ No |  |
| *2.17.13.12* | *oil temperature at the engine inlet.* | ☐ Yes ☐ No |  |
| 2.17.14 | The control cabinet and software must ensure the following: | ☐ Yes ☐ No |  |
| *2.17.14.1* | *display of all engine-generator parameters on the panel and screen in the boiler house;* | ☐ Yes ☐ No |  |
| *2.17.14.2* | *the possibility of emergency stop of the engine-generator from the control panel in the operator's room;* | ☐ Yes ☐ No |  |
| *2.17.14.3* | *automatic connection of the generator to the grid using a synchroniser;* | ☐ Yes ☐ No |  |
| *2.17.14.4* | *warning and alarm signals when the parameters go beyond the set limits;* | ☐ Yes ☐ No |  |
| *2.17.15* | *The control system must be capable of recording and storing key operational parameters and emergency signals in a data storage system. The parameters identified in clauses 2.17.15.1 to 2.17.15.3 must be logged and archived, with data retention for a minimum period of 1 month:* | ☐ Yes ☐ No |  |
| *2.17.15.1* | *Operational Parameters to be Logged:*  *Electrical Energy Output: Amount of released electrical energy.*  *Engine Parameters:*  *Engine mill (operational state of the engine).*  *Coolant temperature.*  *Engine wrap (operational state of engine components).*  *Battery: Battery voltage.*  *Controller: Controller mode.*  *Generator Parameters:*  *Generator voltage (L1, L2, L3).*  *Generator frequency.*  *Generator current (L1, L2, L3).*  *Generator tension coefficient.*  *Generator pressure (active).*  *Reactive power of the generator.*  *Generator is operating under load (indication of generator load status).*  *Miscellaneous:*  *Press coolant.*  *Olive press (pressure status).*  *Tightness of the hem and hem tightness coefficient.*  *Active power setting.*  *Engine operating hours.*  *Number of starts.* | ☐ Yes ☐ No |  |
| *2.17.15.2* | *Archived Parameters (Mandatory) to be Logged:*  *Engine Operating Hours.*  *Number of Starts.*  *Electrical Energy Output.*  *Generator Voltage (per phase).*  *Generator Frequency.*  *Generator Current (per phase).*  *Press Coolant.*  *Olive Press.* | ☐ Yes ☐ No |  |
| *2.17.15.3* | *General Emergency Signals to be Logged:*  *Emergency signal of the KSU (based on designated signal parameters).*  *Press coolant lower than normal.*  *Engine coolant temperature higher than normal.*  *Engine wrap higher/lower than normal.*  *Battery voltage lower than normal.*  *Generator frequency abnormal.*  *Generator voltage abnormal.* | ☐ Yes ☐ No |  |
| 2.17.16 | System requirements for air start - a filter element must be provided in the combustion air supply. | ☐ Yes ☐ No |  |
| 2.17.17 | Requirements for the cooling system - flange connections for water inlet and outlet from the cooling jacket, flange connections for inlet and outlet ports must be available. | ☐ Yes ☐ No |  |
| **2.18** | **Requirements for the Equipment Container** | ☐ Yes ☐ No |  |
| 2.18.1 | The container construction shall ensure safe transportation and installation of the Equipment (the container shall not allow damage to the Equipment during transportation and installation). The container construction shall ensure the maintenance of the established microclimate during the operation of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.2 | The container should have a rigid metal structure made of high-quality steel sheets with anti-corrosion treatment and painting, internal thermal insulation of walls and ceiling, as well as internal lining of the engine room with perforated steel sheets. | ☐ Yes ☐ No |  |
| 2.18.3 | The container must allow fulfilment of all requirements necessary for the operation (work) of the Equipment (cogeneration unit) in all provided modes. The container construction shall provide the possibility of internal inspection of the Equipment and access to the main elements of the Equipment for regular maintenance. | ☐ Yes ☐ No |  |
| 2.18.4 | The container shall have all necessary pipework and internal cable connections provided and installed within the container to ensure standard procedures and operation of the Equipment in each intended mode of operation. | ☐ Yes ☐ No |  |
| 2.18.5 | The Container shall have ventilation windows that are equipped with special protective grilles on the outside to protect the internal Equipment from atmospheric precipitation and foreign objects. | ☐ Yes ☐ No |  |
| 2.18.6 | The container shall have doors on each side of the container with handles for opening from the outside and locks to prevent unauthorised access.. | ☐ Yes ☐ No |  |
| 2.18.7 | The container is equipped with 220 V internal lighting lamps from an external power supply via a panel or auxiliary service panel. | ☐ Yes ☐ No |  |
| 2.18.8 | The container must be equipped with 220V (10A) sockets, which are installed in the container from an external power source through a panel or auxiliary service panel for connecting tools. The sockets are located on both sides of the container and next to the control cabinet and distribution board. | ☐ Yes ☐ No |  |
| 2.18.9 | Inside the container: on the outer wall of the container there are pipelines for fuel supply from the gas inlet flange and other necessary elements to ensure gas supply. | ☐ Yes ☐ No |  |
| 2.18.10 | The engine cooling system shall be equipped with all necessary components, pipework and power cables to ensure reliable and uninterrupted engine operation in each envisaged operating mode of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.11 | The exhaust system of the engine shall be equipped with a noise silencer and all necessary components and pipework to ensure reliable and trouble-free operation of the engine in each of the envisaged operating modes of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.12 | The container must have a built-in gas monitoring system using modern analysers, light and sound sensors, electromagnetic gas supply valves and methane sensors. The system continuously (continuously) monitors the gas level inside the container. | ☐ Yes ☐ No |  |
| 2.18.13 | The container must have a fire alarm system. | ☐ Yes ☐ No |  |
| 2.18.14 | Inside the container: a common built-in grounding bus with 2 points shall be provided for all major elements of the Equipment (cogeneration plant) (i.e. generator, motor, panels, lights, sockets) for further connection to the grounding system on site to the outer frame of the container (diagonally on both sides). | ☐ Yes ☐ No |  |
| 2.18.15 | The container construction should include a port for connecting external power, control and alarm cables. | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** | ☐ Yes ☐ No |  |
| 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 |  |
| 2.19.3 | order number, | ☐ Yes ☐ No |  |
| 2.19.4 | brand name, | ☐ Yes ☐ No |  |
| 2.19.5 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.6 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.7 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general requirements** | ☐ Yes ☐ No |  |
| 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 |
| 3.3 | Spare Parts and Consumables: Bidder must provide a list of recommended spare parts and consumables for the first 2 years of operation, including costs. | ☐ Yes ☐ No |  |
| 3.4 | Performance Testing and Acceptance Criteria: Bidder must provide performance testing upon delivery and outline acceptance criteria, including who will conduct the testing and how results will be documented. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No |  |
| 3.5 | Bidder must provide a Training proposal for the personnel who will operate and maintain the cogeneration units, including the scope and duration of the training. Training must be provided in on-line format in Ukrainian language. The final program of the training must be agreed with the beneficiary before the beginning of the training. Cost of the training must be included in the cost of the units. | ☐ Yes ☐ No |  |

**C.4. Delivery requirements for Lot 4**

| **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 a minimum one full item (full q-ty required for item) 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 5. Cogeneration gas units (1500 - 2100 kW)**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 5** | **Gas cogeneration units (1500 - 2100 kW) according to the below specifications** | ☐ Yes ☐ No |  |
| **Item 5.1** | **Cogeneration gas unit 1500 - 1560 kW - 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 5.2** | **Cogeneration gas unit 2000 - 2100 kW - 1 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **The required CGUs' will be installed on 1 site, should be from 1 manufacturer and should include appropriate synchronization panels to connect units between each other. Cogeneration units must be manufactured in accordance with the requirements of regulatory documents in force in Ukraine, including state standards (DSTU), technical specifications (TS), ISO, and other standards established by current legislation. The producer must comply with the following standards, with confirmation of compliance included in the equipment’s passport/manual:** | ☐ Yes ☐ No |  |
| 1.1.1 | The manufacturer is certified under ISO 9001:2015 for the design, production, and maintenance of internal combustion engines, cogeneration units, power plants, and associated spare parts. Include ISO 9001:2015 certification details in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.2 | The electrical equipment of the cogeneration units must comply with DSTU EN 60204-1:2015. Certificate of compliance with DSTU EN 60204-1:2015 must be provided. | ☐ Yes ☐ No |  |
| 1.1.3 | The cogeneration units must comply with the Low Voltage Directive (2014/35/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| 1.1.4 | The cogeneration units must comply with the Electromagnetic Compatibility Directive Directive (2014/30/EU). ISO 9001:2015 certification details must be included in the equipment’s passport or manual. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (cogeneration units) 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 (cogeneration units), shall provide Manufacturer's Authorisation for supply of the Equipment (cogeneration units) 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 labor, parts, and transportation 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 | Please provide details |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Sample passport/quality certificate from the manufacturer for a product of similar (or higher) power and voltage class with technical characteristics. | ☐ Yes ☐ No |  |
| 1.9.2 | Certificates of compliance with Ukrainian technical requirements. | ☐ Yes ☐ No |  |
| 1.9.3 | Example of the operating instructions (manual) for the product, including documentation on scheduled repairs for a product of similar power and voltage class, in Ukrainian language. | ☐ Yes ☐ No |  |
| 1.9.4 | Example of dimensional and installation drawings for a product of similar power and voltage class, control cabinet diagrams. | ☐ Yes ☐ No |  |
| 1.9.5 | A letter of guarantee from the Bidder stating that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.9.6 | Manufacturer's technical literature/catalogue, all confirming that the offered items comply with required specifications. | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.10.1 | All documentation required for on-site installation shall be included in the scope of delivery, listed in the specifications, labelled and packaged for transport. | ☐ Yes ☐ No |  |
| 1.10.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.10.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **The equipment must be a gas-piston cogeneration unit.** | ☐ Yes ☐ No |  |
| **2.3** | **The equipment must be equipped with: a gas piston engine equipped with all necessary systems, components, pipelines and power cables in accordance with the manufacturer's standard designs, ensuring reliable and uninterrupted operation of the engine in each of the provided operating modes, mounted together with the generator on a robust and vibration-dampened common frame for mounting both the engine and generator, designed to ensure structural integrity and ease of maintenance.** | ☐ Yes ☐ No |  |
| **2.4** | **The equipment shall be equipped with the necessary technological systems as listed below:** | ☐ Yes ☐ No |  |
| 2.4.1 | engine lubrication system, circulating under pressure, with free oil discharge into the track; | ☐ Yes ☐ No |  |
| 2.4.2 | gas supply system; | ☐ Yes ☐ No |  |
| 2.4.3 | set of required (mandatory) sensors; | ☐ Yes ☐ No |  |
| 2.4.4 | an electric starter motor and battery system for reliable engine startup; | ☐ Yes ☐ No |  |
| 2.4.5 | cooling tower that removes heat from the cooling circuit of the (process) mixture; | ☐ Yes ☐ No |  |
| 2.4.6 | a comprehensive cooling system including a radiator, cooling fans, coolant pumps, and all necessary coolant lines to maintain optimal engine temperatures during operation with emergency cooling tower that removes unused heat to operate in the absence of heat demand, removing excess cooling heat to ensure a stable plant output; | ☐ Yes ☐ No |  |
| 2.4.7 | the necessary pumping equipment for the cooling circuits; | ☐ Yes ☐ No |  |
| 2.4.8 | high-quality exhaust manifold and noise-suppressing silencer to reduce noise levels and manage exhaust gases efficiently; | ☐ Yes ☐ No |  |
| 2.4.9 | flue gas heat recovery system; | ☐ Yes ☐ No |  |
| 2.4.10 | an Engine Control Unit (ECU) to manage engine operation, including fuel injection, ignition timing, and engine diagnostics, with a user-friendly control panel with display screens to monitor and control engine and generator parameters, including start/stop functions, operational status, and fault indicators; | ☐ Yes ☐ No |  |
| 2.4.11 | exhaust gas recovery boiler for a gas piston plant; | ☐ Yes ☐ No |  |
| 2.4.12 | voltage generator: 6.3 kV | ☐ Yes ☐ No |  |
| 2.4.13 | gas inlet pressure - no more than 2.0 atm. | ☐ Yes ☐ No |  |
| **2.5** | **The equipment (cogeneration unit) must provide for the possibility of autonomous start-up (in the event of a power outage).** | ☐ Yes ☐ No |  |
| **2.6** | **The cogeneration plant must be capable of operating in both parallel with the network and in "island" mode (standalone operation). The system must seamlessly transition between these modes to ensure continuous power supply under all conditions.**  **In addition, the following components and requirements must be met:** | ☐ Yes ☐ No |  |
| 2.6.1 | Parallel Operation: The cogeneration plant must be fully compatible with grid connection and be able to synchronize with the network, sharing the load as required. | ☐ Yes ☐ No |  |
| 2.6.2 | Island Mode Operation: The plant must be capable of operating independently from the grid, providing reliable power in the event of a network failure. This mode should include automatic start-up and load management capabilities. | ☐ Yes ☐ No |  |
| 2.6.3 | Starting Batteries: The cogeneration plant must include starting batteries as mandatory components. These batteries should be of adequate capacity to ensure reliable engine start-up in all operating conditions, including during network outages. | ☐ Yes ☐ No |  |
| **2.7** | **The equipment (cogeneration unit) must be capable of autonomous operation during such power outages.** | ☐ Yes ☐ No |  |
| **2.8** | **The equipment (cogeneration unit) must ensure that the cos φ value is maintained in the range of 1.0-0.90 at the balance point when operating in parallel with the general network.** | ☐ Yes ☐ No |  |
| **2.9** | **The equipment (cogeneration unit) must provide the function of automatic voltage regulation at a given level.** | ☐ Yes ☐ No |  |
| **2.10** | **The equipment (cogeneration unit) must provide power control of flows to and from the network.** | ☐ Yes ☐ No |  |
| **2.11** | **The electrical power output must be at least as specified in the table below.** | ☐ Yes ☐ No |  |
| **2.12** | **Emission Control: Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%.** | ☐ Yes ☐ No |  |
| 2.12.1 | Emission control systems such as catalytic converters to reduce harmful emissions in compliance with environmental regulations. | ☐ Yes ☐ No |  |
| 2.12.2 | Mass emissions of nitrogen oxides not exceeding NOx-190 mg/nm3 with O2=15% or NOx-500 mg/nm3 with O2=5%. | ☐ Yes ☐ No |  |
| **2.13** | **The cogeneration must be delivered in a container.** | ☐ Yes ☐ No |  |
| **2.14** | **Thermal efficiency minimum 36%.** | ☐ Yes ☐ No |  |
| **2.15** | **The gas generators must demonstrate high fuel efficiency, with a target thermal efficiency of at least 36% and an overall efficiency (electrical and thermal) of at least 80%. Efficiency data and testing documentation must be provided. Generators achieving higher efficiencies will be given preference.** | ☐ Yes ☐ No |  |
| **2.16** | **Technical requirements for the generator** | ☐ Yes ☐ No |  |
| 2.16.1 | Voltage, kV: 6.3 | ☐ Yes ☐ No |  |
| 2.16.2 | Current frequency, Hz: 50. | ☐ Yes ☐ No |  |
| 2.16.3 | Insulation class: H. | ☐ Yes ☐ No |  |
| 2.16.4 | Pre-load heating class: F. | ☐ Yes ☐ No |  |
| 2.16.5 | Maximum environmental temperature: 40 C. | ☐ Yes ☐ No |  |
| 2.16.6 | Winding temperature sensors: available. | ☐ Yes ☐ No |  |
| **2.17** | **Requirements to the management and control system** | ☐ Yes ☐ No |  |
| 2.17.1 | automatic engine speed control; | ☐ Yes ☐ No |  |
| 2.17.2 | automatic temperature control in cooling and lubrication systems; | ☐ Yes ☐ No |  |
| 2.17.3 | automatic regulation of the generator voltage; | ☐ Yes ☐ No |  |
| 2.17.4 | automatic recharging of batteries; | ☐ Yes ☐ No |  |
| 2.17.5 | displaying the values of the monitored engine-generator parameters on the local engine dashboard (for engine operation parameters) and on the generator control cabinet panel (for electrical parameters); | ☐ Yes ☐ No |  |
| 2.17.6 | autonomous operation in case of power failure from interface protection systems; | ☐ Yes ☐ No |  |
| 2.17.7 | smooth voltage regulation in the range from -10% to +5%; | ☐ Yes ☐ No |  |
| 2.17.8 | control of the engine oil pump; | ☐ Yes ☐ No |  |
| 2.17.9 | power supply and control of the engine speed controller; | ☐ Yes ☐ No |  |
| 2.17.10 | engine start and stop control; | ☐ Yes ☐ No |  |
| 2.17.11 | control of the engine starting system; | ☐ Yes ☐ No |  |
| 2.17.12 | engine gas valve control; | ☐ Yes ☐ No |  |
| 2.17.13 | automatic emergency stop with disconnection and protection of the following parameters (with a signal from the control cabinet to disconnect the generator switch): | ☐ Yes ☐ No |  |
| *2.17.13.1* | *overload exceeding 10% of the nominal;* | ☐ Yes ☐ No |  |
| *2.17.13.2* | *at reverse power;* | ☐ Yes ☐ No |  |
| *2.17.13.3* | *ignition malfunction;* | ☐ Yes ☐ No |  |
| *2.17.13.4* | *maximum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.5* | *minimum generator voltage;* | ☐ Yes ☐ No |  |
| *2.17.13.6* | *low gas pressure;* | ☐ Yes ☐ No |  |
| *2.17.13.7* | *gas in the room;* | ☐ Yes ☐ No |  |
| *2.17.13.8* | *water pressure in the internal circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.9* | *water pressure in the external circuit;* | ☐ Yes ☐ No |  |
| *2.17.13.10* | *oil pressure after the filter at the engine inlet;* | ☐ Yes ☐ No |  |
| *2.17.13.11* | *water temperature at the engine outlet;* | ☐ Yes ☐ No |  |
| *2.17.13.12* | *oil temperature at the engine inlet.* | ☐ Yes ☐ No |  |
| 2.17.14 | The control cabinet and software must ensure the following: | ☐ Yes ☐ No |  |
| *2.17.14.1* | *display of all engine-generator parameters on the panel and screen in the boiler house;* | ☐ Yes ☐ No |  |
| *2.17.14.2* | *the possibility of emergency stop of the engine-generator from the control panel in the operator's room;* | ☐ Yes ☐ No |  |
| *2.17.14.3* | *automatic connection of the generator to the grid using a synchroniser;* | ☐ Yes ☐ No |  |
| *2.17.14.4* | *warning and alarm signals when the parameters go beyond the set limits;* | ☐ Yes ☐ No |  |
| *2.17.15* | *The control system must be capable of recording and storing key operational parameters and emergency signals in a data storage system. The parameters identified in clauses 2.17.15.1 to 2.17.15.3 must be logged and archived, with data retention for a minimum period of 1 month:* | ☐ Yes ☐ No |  |
| *2.17.15.1* | *Operational Parameters to be Logged:*  *Electrical Energy Output: Amount of released electrical energy.*  *Engine Parameters:*  *Engine mill (operational state of the engine).*  *Coolant temperature.*  *Engine wrap (operational state of engine components).*  *Battery: Battery voltage.*  *Controller: Controller mode.*  *Generator Parameters:*  *Generator voltage (L1, L2, L3).*  *Generator frequency.*  *Generator current (L1, L2, L3).*  *Generator tension coefficient.*  *Generator pressure (active).*  *Reactive power of the generator.*  *Generator is operating under load (indication of generator load status).*  *Miscellaneous:*  *Press coolant.*  *Olive press (pressure status).*  *Tightness of the hem and hem tightness coefficient.*  *Active power setting.*  *Engine operating hours.*  *Number of starts.* | ☐ Yes ☐ No |  |
| *2.17.15.2* | *Archived Parameters (Mandatory) to be Logged:*  *Engine Operating Hours.*  *Number of Starts.*  *Electrical Energy Output.*  *Generator Voltage (per phase).*  *Generator Frequency.*  *Generator Current (per phase).*  *Press Coolant.*  *Olive Press.* | ☐ Yes ☐ No |  |
| *2.17.15.3* | *General Emergency Signals to be Logged:*  *Emergency signal of the KSU (based on designated signal parameters).*  *Press coolant lower than normal.*  *Engine coolant temperature higher than normal.*  *Engine wrap higher/lower than normal.*  *Battery voltage lower than normal.*  *Generator frequency abnormal.*  *Generator voltage abnormal.* | ☐ Yes ☐ No |  |
| 2.17.16 | System requirements for air start - a filter element must be provided in the combustion air supply. | ☐ Yes ☐ No |  |
| 2.17.17 | Requirements for the cooling system - flange connections for water inlet and outlet from the cooling jacket, flange connections for inlet and outlet ports must be available. | ☐ Yes ☐ No |  |
| **2.18** | **Requirements for the Equipment Container** | ☐ Yes ☐ No |  |
| 2.18.1 | The container construction shall ensure safe transportation and installation of the Equipment (the container shall not allow damage to the Equipment during transportation and installation). The container construction shall ensure the maintenance of the established microclimate during the operation of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.2 | The container should have a rigid metal structure made of high-quality steel sheets with anti-corrosion treatment and painting, internal thermal insulation of walls and ceiling, as well as internal lining of the engine room with perforated steel sheets. | ☐ Yes ☐ No |  |
| 2.18.3 | The container must allow fulfilment of all requirements necessary for the operation (work) of the Equipment (cogeneration unit) in all provided modes. The container construction shall provide the possibility of internal inspection of the Equipment and access to the main elements of the Equipment for regular maintenance. | ☐ Yes ☐ No |  |
| 2.18.4 | The container shall have all necessary pipework and internal cable connections provided and installed within the container to ensure standard procedures and operation of the Equipment in each intended mode of operation. | ☐ Yes ☐ No |  |
| 2.18.5 | The Container shall have ventilation windows that are equipped with special protective grilles on the outside to protect the internal Equipment from atmospheric precipitation and foreign objects. | ☐ Yes ☐ No |  |
| 2.18.6 | The container shall have doors on each side of the container with handles for opening from the outside and locks to prevent unauthorised access.. | ☐ Yes ☐ No |  |
| 2.18.7 | The container is equipped with 220 V internal lighting lamps from an external power supply via a panel or auxiliary service panel. | ☐ Yes ☐ No |  |
| 2.18.8 | The container must be equipped with 220V (10A) sockets, which are installed in the container from an external power source through a panel or auxiliary service panel for connecting tools. The sockets are located on both sides of the container and next to the control cabinet and distribution board. | ☐ Yes ☐ No |  |
| 2.18.9 | Inside the container: on the outer wall of the container there are pipelines for fuel supply from the gas inlet flange and other necessary elements to ensure gas supply. | ☐ Yes ☐ No |  |
| 2.18.10 | The engine cooling system shall be equipped with all necessary components, pipework and power cables to ensure reliable and uninterrupted engine operation in each envisaged operating mode of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.11 | The exhaust system of the engine shall be equipped with a noise silencer and all necessary components and pipework to ensure reliable and trouble-free operation of the engine in each of the envisaged operating modes of the Equipment. | ☐ Yes ☐ No |  |
| 2.18.12 | The container must have a built-in gas monitoring system using modern analysers, light and sound sensors, electromagnetic gas supply valves and methane sensors. The system continuously (continuously) monitors the gas level inside the container. | ☐ Yes ☐ No |  |
| 2.18.13 | The container must have a fire alarm system. | ☐ Yes ☐ No |  |
| 2.18.14 | Inside the container: a common built-in grounding bus with 2 points shall be provided for all major elements of the Equipment (cogeneration plant) (i.e. generator, motor, panels, lights, sockets) for further connection to the grounding system on site to the outer frame of the container (diagonally on both sides). | ☐ Yes ☐ No |  |
| 2.18.15 | The container construction should include a port for connecting external power, control and alarm cables. | ☐ Yes ☐ No |  |
| **2.19** | **Packaging requirements** | ☐ Yes ☐ No |  |
| 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 |  |
| 2.19.3 | order number, | ☐ Yes ☐ No |  |
| 2.19.4 | brand name, | ☐ Yes ☐ No |  |
| 2.19.5 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.19.6 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.19.7 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general requirements** | ☐ Yes ☐ No |  |
| 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 |
| 3.3 | Spare Parts and Consumables: Bidder must provide a list of recommended spare parts and consumables for the first 2 years of operation, including costs. | ☐ Yes ☐ No |  |
| 3.4 | Performance Testing and Acceptance Criteria: Bidder must provide performance testing upon delivery and outline acceptance criteria, including who will conduct the testing and how results will be documented. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No |  |
| 3.5 | Bidder must provide a Training proposal for the personnel who will operate and maintain the cogeneration units, including the scope and duration of the training. Training must be provided in on-line format in Ukrainian language. The final program of the training must be agreed with the beneficiary before the beginning of the training. Cost of the training must be included in the cost of the units. | ☐ Yes ☐ No |  |

**C.5. Delivery requirements for Lot 5**

| **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 a minimum one full item (full q-ty required for item) 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 6. Gas generators**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 6.** | **Gas generation units (usually propane-butane or natural gas) to generate electricity, must have low emissions of harmful substances from its combustion and must be able to be connected to the gas mains according to the below specifications** | ☐ Yes ☐ No |  |
| **Item 6.1** | **Gas generator 40 - 50 kW - 5 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **Item 6.2** | **Gas generator 60 - 70 kW - 5 PCS** | ☐ Yes ☐ No | Please provide brand/model of the equipment |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **The gas generators must comply with the below standards, and confirmation of compliance must be included in the equipment's passport/manual. Separate compliance evidence documents are not required.** | ☐ Yes ☐ No |  |
| 1.1.1 | Certificate of Conformity: Clauses 6.1-6.12, 6.14-6.17 of DSTU EN ISO 8528-13:2018; Sections 4-8, 12.4, 13-15, 17-18 of DSTU EN 60204-1:2019; Section 8 of DSTU EN 61000-6-2:2018; Section 7 of DSTU EN 61000-6-4:2016. | ☐ Yes ☐ No |  |
| 1.1.2 | Declaration of Conformity with Safety Regulations: Complies with DSTU EN ISO 8528-13:2018. | ☐ Yes ☐ No |  |
| 1.1.3 | Declaration of Conformity with EMC Regulations: Complies with DSTU EN 61000-6-2:2018 and DSTU EN 61000-6-4:2016. | ☐ Yes ☐ No |  |
| 1.1.4 | Declaration of Conformity with Low Voltage Regulations: Complies with DSTU EN 60204-1:2019. | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must 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 (gas generators) 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 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 | A sample of the manufacturer's passport/quality certificate for the goods confirming the technical characteristics of the goods | ☐ Yes ☐ No |  |
| 1.8.2 | Certificates of conformity. | ☐ Yes ☐ No |  |
| 1.8.3 | A sample of the product's operating instructions (manual), including documentation on scheduled repairs for a product of similar power and voltage class in Ukrainian. | ☐ Yes ☐ No |  |
| 1.8.4 | A letter of guarantee that the goods will be accompanied by quality documents (passport and/or quality certificate from the manufacturer) upon delivery. | ☐ Yes ☐ No |  |
| 1.8.5 | List of service centres in Ukraine with information on physical addresses, web addresses, phone numbers. | ☐ Yes ☐ No |  |
| **1.9** | **The following documentation must be provided with the goods upon delivery** | ☐ Yes ☐ No |  |
| 1.9.1 | Passport and/or quality certificate from the manufacturer | ☐ Yes ☐ No |  |
| 1.9.2 | An instruction and/or manual in Ukrainian shall be provided. | ☐ Yes ☐ No |  |
| 1.9.3 | A list of service centres in Ukraine with information on physical addresses, web addresses, telephone numbers must be provided. | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **The equipment must be new, undamaged, and manufactured no earlier than 2023.** | ☐ Yes ☐ No |  |
| **2.2** | **Gas generator with autostart - to ensure power supply to the facility in case of failure of the main power source, or to cover short consumption peaks when a power shortage may occur.** | ☐ Yes ☐ No |  |
| **2.3** | **The rated power of the generator (maximum power at variable load during unlimited operating time) is 40 - 50 kW for item 6.1 and 60-70 kW for item 6.2.** | ☐ Yes ☐ No |  |
| **2.4** | **The load must not exceed 70% of the rated capacity for 250 hours of continuous operation. The power generator should not operate at 100% of its rated capacity for more than 500 hours per year.** | ☐ Yes ☐ No |  |
| **2.5** | **The overload should not exceed +10% in one hour for 12 hours of continuous operation.** | ☐ Yes ☐ No |  |
| **2.6** | **Technical requirements to item 6.1 - 40-50 kW generator** |  |  |
| 2.6.1 | Rated power (PRP kW/kVA) not less than 40/50 | ☐ Yes ☐ No |  |
| 2.6.2 | Standby power (LTP kW/kVA) not less than 45/55 | ☐ Yes ☐ No |  |
| 2.6.3 | **Engine minimum requirements** |  |  |
| 2.6.3.1 | Maximum engine power (kW), not less than 60 for 40-50 kW generators. | ☐ Yes ☐ No |  |
| 2.6.3.2 | Number of cylinders - 8 | ☐ Yes ☐ No |  |
| 2.6.3.3 | Oil volume in the engine, litres - not less than 4.7 | ☐ Yes ☐ No |  |
| 2.6.3.4 | Type of fuel - Natural gas (pipeline) | ☐ Yes ☐ No |  |
| 2.6.3.5 | Inlet gas pressure - 300 mbar (0,3 bar) | ☐ Yes ☐ No |  |
| 2.6.3.6 | Engine speed, 1/min - min. 1500 | ☐ Yes ☐ No |  |
| 2.6.3.7 | Electrical system of the engine - 12 V d.c. | ☐ Yes ☐ No |  |
| 2.6.3.8 | Fuel consumption, at 100% load, not more than 15,5 / 21,7 (kg/hr / m3/hr) | ☐ Yes ☐ No |  |
| 2.6.4 | **Alternator minimum requirements** |  |  |
| 2.6.4.1 | Power (not less than) 75 kVa | ☐ Yes ☐ No |  |
| 2.6.4.2 | Frequency - 50 Hz | ☐ Yes ☐ No |  |
| 2.6.4.3 | Number of phases - 3 | ☐ Yes ☐ No |  |
| 2.6.4.4 | COS ⱷ - min. o.8 | ☐ Yes ☐ No |  |
| 2.6.4.5 | Alternator voltage (V) - 400\230 V at 50 Hz | ☐ Yes ☐ No |  |
| 2.6.4.6 | Voltage regulator (not worse) - DER1 (+/-) 1% | ☐ Yes ☐ No |  |
| 2.6.4.7 | Protection - not less than IP23 | ☐ Yes ☐ No |  |
| 2.6.4.8 | Insulation class - H | ☐ Yes ☐ No |  |
| 2.6.5 | **Additional requirements** |  |  |
| 2.6.5.1 | All-weather noise-absorbing hood | ☐ Yes ☐ No |  |
| 2.6.5.2 | Heated engine cooling jacket; | ☐ Yes ☐ No |  |
| 2.6.5.3 | Rechargeable batteries with cable and terminals; | ☐ Yes ☐ No |  |
| 2.6.5.4 | Automatic recharge of the rechargeable battery; | ☐ Yes ☐ No |  |
| 2.6.5.5 | Generator control panel DSE6120 | ☐ Yes ☐ No |  |
| 2.6.5.6 | Rigging grips; | ☐ Yes ☐ No |  |
| 2.6.5.7 | Eyebolts for crane lifting; | ☐ Yes ☐ No |  |
| 2.6.5.8 | Carrying out commissioning works at the Customer's site | ☐ Yes ☐ No |  |
| **2.7** | **Technical requirements to item 6.2 - 60-70 kW generator** |  |  |
| 2.7.1 | Rated power (PRP kW/kVA) not less than 60/75 | ☐ Yes ☐ No |  |
| 2.7.2 | Standby power (LTP kW/kVA) not less than 66,7/83,3 | ☐ Yes ☐ No |  |
| 2.7.3 | **Engine minimum requirements** |  |  |
| 2.7.3.1 | Maximum engine power (kW), not less than 80 for 60-70 kW generators. | ☐ Yes ☐ No |  |
| 2.7.3.2 | Number of cylinders - 8 | ☐ Yes ☐ No |  |
| 2.7.3.3 | Oil volume in the engine, litres - not less than 4.7 | ☐ Yes ☐ No |  |
| 2.7.3.4 | Type of fuel - Natural gas (pipeline) | ☐ Yes ☐ No |  |
| 2.7.3.5 | Inlet gas pressure - 300 mbar (0,3 bar) | ☐ Yes ☐ No |  |
| 2.7.3.6 | Engine speed, 1/min - min. 1500 | ☐ Yes ☐ No |  |
| 2.7.3.7 | Electrical system of the engine - 12 V d.c. | ☐ Yes ☐ No |  |
| 2.7.3.8 | Fuel consumption, at 100% load, not more than 21 / 29 (kg/hr / m3/hr) | ☐ Yes ☐ No |  |
| 2.7.4 | **Alternator minimum requirements** |  |  |
| 2.7.4.1 | Power (not less than) 75 kVa | ☐ Yes ☐ No |  |
| 2.7.4.2 | Frequency - 50 Hz | ☐ Yes ☐ No |  |
| 2.7.4.3 | Number of phases - 3 | ☐ Yes ☐ No |  |
| 2.7.4.4 | COS ⱷ - min. o.8 | ☐ Yes ☐ No |  |
| 2.7.4.5 | Alternator voltage (V) - 400\230 V at 50 Hz | ☐ Yes ☐ No |  |
| 2.7.4.6 | Voltage regulator (not worse) - DER1 (+/-) 1% | ☐ Yes ☐ No |  |
| 2.7.4.7 | Protection - not less than IP23 | ☐ Yes ☐ No |  |
| 2.7.4.8 | Insulation class - H | ☐ Yes ☐ No |  |
| 2.7.5 | **Additional requirements** |  |  |
| 2.7.5.1 | All-weather noise-absorbing hood | ☐ Yes ☐ No |  |
| 2.7.5.2 | Heated engine cooling jacket; | ☐ Yes ☐ No |  |
| 2.7.5.3 | Rechargeable batteries with cable and terminals; | ☐ Yes ☐ No |  |
| 2.7.5.4 | Automatic recharge of the rechargeable battery; | ☐ Yes ☐ No |  |
| 2.7.5.5 | Generator control panel DSE6120 | ☐ Yes ☐ No |  |
| 2.7.5.6 | Rigging grips; | ☐ Yes ☐ No |  |
| 2.7.5.7 | Eyebolts for crane lifting; | ☐ Yes ☐ No |  |
| 2.7.5.8 | Carrying out commissioning works at the Customer's site | ☐ Yes ☐ No |  |
| **2.8** | **Packaging requirements** |  |  |
| 2.8.1 | The packaging of the equipment must guarantee protection against mechanical damage. | ☐ Yes ☐ No |  |
| 2.8.2 | Checking the labelling and packaging must be available - after delivery. The packaging of the equipment must indicate: | ☐ Yes ☐ No |  |
| 2.8.2.1 | order number, | ☐ Yes ☐ No |  |
| 2.8.2.2 | brand name, | ☐ Yes ☐ No |  |
| 2.8.2.3 | name of the manufacturer; | ☐ Yes ☐ No |  |
| 2.8.2.4 | gross weight in kg, | ☐ Yes ☐ No |  |
| 2.8.2.5 | date of manufacture (year, month). | ☐ Yes ☐ No |  |
| **3** | **Additional general 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 |
| 3.3 | The gas generators have noise levels not exceeding 75 dB(A) at a distance of 7 meters. Noise reduction measures, such as soundproof enclosures, can be integrated when needed, and documentation of noise level testing are provided. | ☐ Yes ☐ No | Please provide details |
| 3.4 | The gas generators must demonstrate high fuel efficiency, with a minimum efficiency of 36%. Efficiency data and testing documentation must be provided. | ☐ Yes ☐ No | Please provide details |
| 3.5 | Bid includes a maintenance plan, outlining scheduled maintenance activities, intervals, and required spare parts. The plan also includes estimated costs for the first 2 years of operation. Upon delivery the equipment must be filled in with all necessary working fluids to be fully operational at time of the first start. | ☐ Yes ☐ No | Please provide details |

**C.6. Delivery requirements for Lot 6**

| **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 a minimum one full item (full q-ty required for item) 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 |  |