**Section II: Schedule of requirements**

E-Sourcing reference no: RFQ/2024/55003

1. **Summary of Requirements for the supply of Pipes and shaped products to Ukraine.**

**UNOPS requirements are comprised of the following 3 (three) lots:**

**Lot 1. Pre-insulated pipes and shaped products (batch 1) including the below items:**

Item 1.1 . Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm – 300 PCS

Item 1.2. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 160 PCS

Item 1.3. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 4 PCS

Item 1.4. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 5 PCS

Item 1.5. Sliding support for pre-insulated pipes DN600/800 - 186 PCS

Item 1.6. Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 29 PCS

Item 1.7 . Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=250 mm - 10 PCS

Item 1.8. Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 23 PCS

Item 1.9 . Steel pipe with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, L = 12,000 mm - 140 PCS

Item 1.10 . Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 90° - 20 PCS

Item 1.11. Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 60° - 2 PCS

Item 1.12. Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 15° - 2 PCS

Item 1.13. Fixed support straight with thermal insulation of foamed polyurethane and protective outer casing of metal, with alarm system ST/ NM DN600×9.0/800 - 10 PCS

**Lot 2. Pre-insulated pipes and shaped products (batch 2) including the below items:**

Item 1.1 . Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm - 246 PCS

Item 1.2. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 130 PCS

Item 1.3. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 3 PCS

Item 1.4. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 4 PCS

Item 1.5. Sliding support for pre-insulated pipes DN600/800 – 156 PCS

Item 1.6. Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 20 PCS

Item 1.7 . Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=250 mm - 7 PCS

Item 1.8. Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 14 PCS

**Lot 3. Pre-insulated pipes and shaped products (batch 3) including the below items:**

Item 1.1 . Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm - 170 PCS

Item 1.2. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 20 PCS

Item 1.3. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 2 PCS

Item 1.4. Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 2 PCS

Item 1.5. Sliding support for pre-insulated pipes DN600/800 - 58 PCS

Item 1.6. Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 6 PCS

Item 1.7. Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 4 PCS

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

**Lot 1. Pre-insulated pipes and shaped products**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
|  | **PRE-INSULATED PIPES AND SHAPED PRODUCTS** |  |  |
| **Item 1.1** | **Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm – 300 PCS** | ☐ Yes ☐ No |  |
| **Item 1.2** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 160 PCS** | ☐ Yes ☐ No |  |
| **Item 1.3** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 4 PCS** | ☐ Yes ☐ No |  |
| **Item 1.4** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 5 PCS** | ☐ Yes ☐ No |  |
| **Item 1.5** | **Sliding support for pre-insulated pipes DN600/800 - 186 PCS** | ☐ Yes ☐ No |  |
| **Item 1.6** | **Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 29 PCS** | ☐ Yes ☐ No |  |
| **Item 1.7** | **Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=250 mm - 10 PCS** | ☐ Yes ☐ No |  |
| **Item 1.8** | **Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 23 PCS** | ☐ Yes ☐ No |  |
| **Item 1.9** | **Steel pipe with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, L = 12,000 mm - 140 PCS** | ☐ Yes ☐ No |  |
| **Item 1.10** | **Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 90° - 20 PCS** | ☐ Yes ☐ No |  |
| **Item 1.11** | **Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 60° - 2 PCS** | ☐ Yes ☐ No |  |
| **Item 1.12** | **Bend with polyurethane foam thermal insulation, protective outer casing of metal, with alarm system ST/NM DN600×8.0/800, 15° - 2 PCS** | ☐ Yes ☐ No |  |
| **Item 1.13** | **Fixed support straight with thermal insulation of foamed polyurethane and protective outer casing of metal, with alarm system ST/ NM DN600×9.0/800 - 10 PCS** | ☐ Yes ☐ No |  |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **All goods and equipment shall be delivered in compliance with the current Ukrainian laws, regulations and rules, and shall also meet the appropriate European and international standards and certificate of quality to ISO 9001. In case some differences exist between the national and international standards, the standards with stricter requirements shall be applied. All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or European standards.** | ☐ Yes ☐ No |  |
| 1.1.1 | Producer of the equipment must be ISO 9001:2015 certified and the bidder must provide the certificate | ☐ Yes ☐ No |  |
| 1.1.2 | All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or equivalent European standards. | ☐ Yes ☐ No |  |
| 1.1.3 | All materials and goods manufactured abroad and imported to Ukraine shall meet either EN standards or equivalent Ukrainian DSTU standards. The bidder may provide either certificates of conformity or a declaration of equivalency supported by third-party verification (testing). | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must be in continuous business of supplying of the offered or equivalent equipment for at least past 2 years.** | ☐ Yes ☐ No |  |
| **1.3** | **The Bidder must have experience in the delivery of similar equipment in Ukraine or EU/EEA countries and must provide evidence (contracts, POs, certificates of completion, etc) of successful implementation of at least 2 contracts for supply of the offered or equivalent equipment realised in the past years.** | ☐ Yes ☐ No |  |
| **1.4** | **If the goods are delivered by an intermediary, the intermediary shall provide the required manufacturer's documentation without any modification.** | ☐ 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 center shall provide maintenance, repair services, and/or replacement of the equipment no later than 30 (thirty) calendar days from the date of receipt of written or email notification from an authorized party. The name of the company, address, telephone and fax numbers, and email 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 a minimum of 1 year, covering manufacturing defects and labor charges. The Supplier must provide a detailed warranty policy, including terms for warranty claims and service procedures.** | ☐ 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 |  |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.9.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.9.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.9.4 | Information on Goods | ☐ Yes ☐ No |  |
| 1.9.4.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.9.4.2 | Type and model | ☐ Yes ☐ No |  |
| **1.1** | **The following documentation must be provided with the goods upon delivery (all documentation shall be made in Ukrainian, the delivery is not considered to be completed until the documentation pointed out below is delivered in full and accepted by the customer):** | ☐ Yes ☐ No |  |
| 1.10.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.10.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.10.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.10.4 | The necessary requirements for disposal and recycling materials used for district-heating pipes shall be pointed out in the manufacturer’s documentation | ☐ Yes ☐ No |  |
| 1.10.5 | Instructions on transportation and storage of equipment and materials | ☐ Yes ☐ No |  |
| 1.10.6 | Information on Goods | ☐ Yes ☐ No |  |
| 1.10.6.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.10.6.2 | Type and model | ☐ Yes ☐ No |  |
| 1.10.6.3 | Serial number | ☐ Yes ☐ No |  |
| **1.11** | **All the equipment must be new** | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** | ☐ Yes ☐ No |  |
| **2.1** | **General requirements for pipes, components and equipment** | ☐ Yes ☐ No |  |
| 2.1.1 | All (preinsulated) components of pipeline system, such as straight steel electric-welded pipes, kits for insulation of joints, heat-shrink end caps, metal end caps, etc., shall be delivered as a single system solution, in order to be of the same quality, diameters, wall thickness as the pipes and to meet the same requirements for strength, insulation and tightness. | ☐ Yes ☐ No |  |
| 2.1.2 | The Purchaser shall be entitled to visit the chosen manufacturer of preinsulated steel pipes and send any part of pipeline or other object for independent assessment. Any attempt to use pipes, valves, expansion joints or other components used earlier somewhere, whether it is occasional or not, will be considered as fraud. | ☐ Yes ☐ No |  |
| 2.1.3 | All parameters of the heat conducting steel pipes, components and products in insulation shall be based on the following conditions: |  |  |
| 2.1.3.1 | Calculated pressure - not less than 1.6 MPa |  |  |
| 2.1.3.2 | Maximum pressure - not less than 2.5 MPa | ☐ Yes ☐ No |  |
| 2.1.3.3 | Operating temperature - 118 (124)°C | ☐ Yes ☐ No |  |
| 2.1.3.4 | Maximum temperature - 130°C | ☐ Yes ☐ No |  |
| 2.1.3.5 | Air temperature (limit values) - "-37°C … +37°C" | ☐ Yes ☐ No |  |
| 2.1.3.6 | Calculated temperature - "-23°C" | ☐ Yes ☐ No |  |
| 2.1.4 | The pipes shall be resistant to internal corrosion caused by water of district heat supply system with the below characteristics (The Bidder shall take into consideration the above quality of the district heat supply system water): | ☐ Yes ☐ No |  |
| 2.1.4.1 | Carbonate index: ≤1.0 (mEq/l)2 | ☐ Yes ☐ No |  |
| 2.1.4.2 | Dissolved CO2: 0 | ☐ Yes ☐ No |  |
| 2.1.4.3 | Dissolved oxygen: <20 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.4 | pH: 8.3-9.5 | ☐ Yes ☐ No |  |
| 2.1.4.5 | Iron: <0.5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.6 | Suspended solids: <5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.7 | Oil products: <1 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.5 | The Bidder shall guarantee that the declared requirements will be met to provide operation for at least 25 years in case of the maximum calculated temperature. | ☐ Yes ☐ No |  |
| **2.2** | **Technical requirements for pipes** | ☐ Yes ☐ No |  |
| 2.2.1 | The assembled preinsulated pipes shall meet the requirements of European standards EN 253,EN 448 for European manufacturers (compliance must be reflected either in certificates or in the equipment's passport/manual) and of Ukrainian standards DSTU B V.2.5-31:2007 or DSTU EN 253:2016 for Ukrainian manufacturers and be certified by authorized for certification Ukrainian agency (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.2 | The heat-conducting steel pipes may be seamless or welded with longitudinal weld and shall meet standards EN 10217-2 (P235GH), EN 10217-5 (P235 GH) or standard EN 10220 with error for diameter according to EN 253:2009. The pipes manufactured in Ukraine shall meet the requirements of DSTU 8938:2019, DSTU 8939:2019, DSTU 8943:2019, DSTU 9219:2023, GOST 550, GOST 8731, and may be used other pipes allowed by DNAOP 0.00-1.11, DBN 2.04.07 and DSTU B V.2.5-31:2007. The compliance with the above standards must be reflected either in certificates or in the equipment's passport/manual. | ☐ Yes ☐ No |  |
| 2.2.3 | The pipes shall be made of Ст3сп5 steel or an equivalent or superior grade of steel that meets or exceeds the requirements of NPAOP 0.00-1.81-18 “Rules of Labor Protection During Operation of Pressurized Equipment”. The equivalent or superior grade steel must have comparable or better mechanical properties and chemical composition, ensuring the pipes are suitable for high-pressure and high-temperature applications. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.4 | The wall thickness of the steel pipes must be no less than the minimum nominal value specified in EN 253 for the corresponding diameters. The supplier must provide detailed specifications, including engineering drawings and test reports, demonstrating that the wall thickness of the supplied pipes meets or exceeds these standards. |  |  |
| 2.2.5 | The surface of the steel pipe (both external and internal) before applying insulation should be thoroughly cleaned and degreased, electroplating on the surface is applied anti-corrosion coating. The quality of the preparation of the steel pipe to the insulation is to be confirmed by the manufacturer's certificates (including mandatory ultrasonic flaw detection). | ☐ Yes ☐ No |  |
| 2.2.6 | Besides, according to DSTU B V.2.5-31:2007, both ends of the pipe shall have no insulation to the length of 220 mm with error of ± 5 mm. This requirement shall be applied to all kinds of pipes and shaped parts to be delivered. | ☐ Yes ☐ No |  |
| 2.2.7 | Each section of the pipe must be marked by the manufacturer - by any indelible method on the polyethylene shell at a distance of at least 200 mm from the end of the insulation, with the information on the size of the pipe pipe, the trademark or the name of the manufacturer's plant, lot number and production date. In addition, each pipe on both ends must have a duplicate sticker (moisture-proof) - quality control. | ☐ Yes ☐ No |  |
| 2.2.8 | The polyurethane insulation of preinsulated pipes shall comply with the requirements of EN253 and DSTU EN 253:2016. The thermal conductivity shall not exceed 0.029 W/(m×K) when measured at a temperature of 50°C. The insulation must also comply with relevant fire safety standards. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.9 | The foam of the polyurethane insulation shall have a zero ozone-depleting potential. To this end, the hydrochlorofluorocarbons (HCFC) or their hydrogenated derivatives shall not be used. The foamed polyurethane shall be manufactured with the use of the foam former on the basis of cyclopentane or water-based blowing agent. | ☐ Yes ☐ No |  |
| 2.2.10 | Pipes should be suitable to be used for the heat carrier with the below characteristics: | ☐ Yes ☐ No |  |
| 2.2.10.1 | Heat carrier temperature for continuous operation: 130°C | ☐ Yes ☐ No |  |
| 2.2.10.2 | Heat conductivity at 50°C: not exceed 0.029 W/(m×K) | ☐ Yes ☐ No |  |
| 2.2.10.3 | Average density: not less than 60 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.11 | The outer casing of the pipelines of types ST/PE shall be manufactured of high-density polyethylene and meet the requirements of DSTU B V.2.5-31:2007 and EN 253:2009. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). The main requirements for polyethylene are presented below: | ☐ Yes ☐ No |  |
| 2.2.11.1 | Material - High-density polyethylene, at least PE-80 | ☐ Yes ☐ No |  |
| 2.2.11.2 | Density - > 940 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.12 | Alternatives to HDPE may be considered if they provide equivalent or superior durability, thermal insulation, and compliance with the specified standards. Bidders proposing alternative materials must provide detailed technical specifications and third-party test results demonstrating compliance. | ☐ Yes ☐ No |  |
| 2.2.13 | The outer casing for ST/NM type pipes must be made of galvanized sheet steel with a sealed seam (external or internal) in accordance with DSTU B B.2.5-31:2007 and EN 253:2009. The shell must have a minimum thickness of 1 mm and an anti-corrosion coating with a minimum thickness of 70 microns. Alternative materials that provide equivalent or superior corrosion resistance and strength are allowed, provided they comply with the relevant norms and standards. Bidders proposing alternative materials must provide detailed technical specifications and third-party test results demonstrating compliance. | ☐ Yes ☐ No |  |
| 2.2.14 | In case of arising any doubts about characteristics of the products and values pointed out in the certificate, the Purchaser reserves the right to conduct laboratory study of the delivered products. The Purchaser shall pay the results of the study. In case of incompliance of the appropriate characteristics, the Supplier shall compensate to the Purchaser these expenses. | ☐ Yes ☐ No |  |
| 2.2.15 | The Bidder shall clearly specify the actual value of thermal conductivity for the foam insulation used in the offered goods (including pipes, bends, and shaped parts) in their technical offer. This value must be supported by appropriate documentation, such as test certificates from an accredited testing laboratory. These documents should provide detailed test results and confirm that the thermal conductivity meets the specified requirements. | ☐ Yes ☐ No |  |
| 2.2.16 | The pre-insulated pipes should be 12 meter in length. The working design will determine the minimum number of joints that will be introduced between the sections of the pipeline. Each pipe must be equipped with rustproof hoods (both ends). | ☐ Yes ☐ No |  |
| **2.3** | **General technical requirements to products and components** | ☐ Yes ☐ No |  |
| 2.3.1 | The types and designs of shaped products, as well as methods of their control, shall conform to DSTU B V.2.5-31:2007 and EN 488:1994, ensuring compatibility with pre-insulated bonded pipe systems for underground hot water networks. Bidders are allowed to propose equivalent designs that meet or exceed these standards, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.2 | The polyethylene (PE) outer casings of the products of the ST/PE type shall be manufactured by butt welding of segments using a hot tool or manual extruder according to approved technological documentation. The PE casing segments shall be made of polyethylene compositions with consistent long-term mechanical properties. Alternative manufacturing methods that ensure equivalent or superior quality and compliance with the specified standards may be considered, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.3 | The values of melt flow index (MFI) of polyethylene, welded segments and filler material used shall not differ more than by 0.5 g/10 minutes. The MFI shall be determined according to DSTU EN ISO 1133-2:2022. | ☐ Yes ☐ No |  |
| 2.3.4 | The displacement of the outer casing sections of the SТ/PЕ products shall not exceed 30% of casing thickness in the cross section of welded joint. |  |  |
| 2.3.5 | All pipeline fittings shall meet the requirements of EN 253, EN 448, EN 489, and DSTU B V.2.5-31:2007, ensuring compatibility and performance in pre-insulated bonded pipe systems. Bidders proposing alternative fittings that meet or exceed these standards must provide detailed technical specifications and third-party test results confirming compliance. | ☐ Yes ☐ No |  |
| 2.3.6 | The filler materials used for welding main components of SТ/PЕ products shall have mechanical properties close to those of the base material of the heat-conducting pipes. All kinds of fusion welding, arc welding with coated electrodes and arc gas-shielded welding may be used. | ☐ Yes ☐ No |  |
| 2.3.7 | Casing of articles of the type ST/NM shall be made of segments of NM casing (of metal, resistant to atmospheric corrosion) by a rebate method followed by soldering. | ☐ Yes ☐ No |  |
| 2.3.8 | During filling the outer casings of the products of SТ/PЕ and ST/NM types, the foamed polyurethane shall not penetrate through the weld. | ☐ Yes ☐ No |  |
| **2.4** | **Technical requirements to bend** | ☐ Yes ☐ No |  |
| 2.4.1 | The design and dimensions of the knee ST/PE and ST/NM types must, in accordance with DSTU B V.2.5-31: 2007, conform to drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - steel pipe; 2 - insulation from polyurethane foam; 3 - a shell of polyethylene or metal resistant to atmospheric corrosion; 4 - centralizers; 5 - knee made of steel; 6 - insulating tube according to GOST 22056; 7 - conductors of the signalling system of the damage to the conductive pipe and / or the shell | ☐ Yes ☐ No |  |
| 2.4.2 | The standard bend angles are 15, 30, 45, 60 and 90° | ☐ Yes ☐ No |  |
| 2.4.3 | The round-bent bend shall be factory made with bend radius not less than one pipeline diameter. | ☐ Yes ☐ No |  |
| 2.4.4 | Isolation with foam polyurethane must meet the requirements of DSTU B V.2.5-31: 2007: "Pipes for thermal networks with thermal insulation from polyurethane foam and protective cover from polyethylene. General specifications". The polyurethane foam should be made using a cyclopentane-based foaming agent or a water-based foaming agent. | ☐ Yes ☐ No |  |
| 2.4.5 | The outer protective shell must be made of high-density polyethylene (minimum PE80). | ☐ Yes ☐ No |  |
| 2.4.6 | The outer side of the cladding products of the ST/NM type should be made of sheet galvanized steel | ☐ Yes ☐ No |  |
| **2.5** | **Technical requirements to supports for pipelines** | ☐ Yes ☐ No |  |
| 2.5.1 | The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.5.2 | The details of the supports should be made of sheet, strip, or round rolled materials that meet or exceed the quality and performance requirements specified in GOST 1577-93, DSTU ISO 4995:2015, DSTU 4747:2007, DSTU 8804:2018, DSTU 8803:2018, DSTU 8540:2015, DSTU 9218:2023, DSTU 9219:2023, DSTU 8938:2019, and DSTU 8939:2019. Bidders may propose alternative materials that provide equivalent or superior performance, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.3 | Steel grade for the parts of the supports should correspond to the below parameters: | ☐ Yes ☐ No |  |
| 2.5.3.1 | Steel grade 20, GOST 1050-88, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.2 | Steel grade 35, GOST 1050-89, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.3 | Steel grade: 35Х, 40Х; GOST 4543-71; minimum design temperature allowed: -50°С | ☐ Yes ☐ No |  |
| 2.5.3.4 | Steel grade: 09Г2С; GOST 4543-71; minimum design temperature allowed: -70°С | ☐ Yes ☐ No |  |
| 2.5.4 | Types and sizes of welds should be taken according to GOST 5264-80 and DSTU ISO/TR 17671-1:2015. | ☐ Yes ☐ No |  |
| 2.5.5 | For welding of supports, welding materials are used according to GOST 9467-75. | ☐ Yes ☐ No |  |
| 2.5.6 | The quality of welds must be certified by the manufacturer. Certification should include detailed test results demonstrating compliance with the specified standards for weld strength and durability. Bidders may provide alternative certification methods that ensure equivalent verification of weld quality. | ☐ Yes ☐ No |  |
| 2.5.7 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternatives that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.8 | The type of anti-corrosive coating for bolts and nuts should be selected according to GOST 9.303-84, depending on the operating conditions, and specified in the work drawings. Bidders may propose alternative anti-corrosive coatings that provide equivalent or superior protection, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| **2.6** | **Technical requirements for sliding support for pre-insulated pipes** |  |  |
| 2.6.1 | The design and dimensions of the sliding support shall be in accordance with the below drawing, the table and the design documentation approved in accordance with the established procedure. (Note: the product “sliding support” does not contain isolation and belongs to products of ST/PE types conditionally). | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
| 2.6.2 | Table of sizes for the supports | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | \* Size for reference  Note 1. The standard sizes of the products not specified in the table must conform to the design documentation of the manufacturer, approved in accordance with the established procedure.  Note 2. The specified linear gradient delineations in Table should have a tolerance of no more than 1% of the size data. | ☐ Yes ☐ No |  |
| 2.6.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternative that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.6.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.6.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.7** | **Technical requirements for fixed support straight with thermal insulation of foamed polyurethane.** |  |  |
| 2.7.1 | The pipelines’ fixed supports shall be manufactured according to the requirements of the specification and working drawings approved with the use of established. The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.7.2 | The pipelines’ fixed supports shall correspond to the drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - shell of polyethylene or metal, resistant to atmospheric corrosion; 2 - a steel pipe; C - conductors of the signaling system of the damage of the pipe and (or) shell; 4 - centralizer; 5 - insulation from polyurethane foam; 6 - the support is immovable; The insulating tube according to GOST 22056 is not conventionally shown in the above drawing. | ☐ Yes ☐ No |  |
| 2.7.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternative that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.7.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.7.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.8** | **Technical requirements to gland expansion compensator** |  |  |
| 2.8.1 | The calculated compensating capability of the gland expansion compensator shall be considered by 50 mm less than the capability provided for by the expansion joint design. | ☐ Yes ☐ No |  |
| 2.8.2 | Drawing is presented below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - gruntbuksa, 2 - stuffing box seal, 3 - shaped pipe, 4 - pipe, 5 - thrust ring. | ☐ Yes ☐ No |  |
| 2.8.3 | For sealing the gland expansion compensator, grease- or graphite impregnated hemp or linen strand is used. The expansion joints of this type may be connected with pipeline ends by butt welding. In this case, the flanges shall not be welded to the ends o the housing and movable internal sleeve being connected, and edges of the sleeves shall be treated for welding. | ☐ Yes ☐ No |  |
| 2.8.4 | The gland expansion compensator for compensation of thermal elongation of pipelines for steam and hot water is designed for: | ☐ Yes ☐ No |  |
| 2.8.4.1 | Operating pressure: 2.5 MPa; | ☐ Yes ☐ No |  |
| 2.8.4.2 | Operating temperature, not more than: 130°С; | ☐ Yes ☐ No |  |
| 2.8.4.3 | Main design material: steel 3сп5 / 09 Г2С. | ☐ Yes ☐ No |  |
| 2.8.5 | The gland expansion compensator are covered by the requirements of the NPAOP 0.00-1.81-18 “Rules of labor protection during operation of pressurized equipment”. | ☐ Yes ☐ No |  |
| 2.8.6 | The marking of compensators and seals should contain the trademark of the manufacturer, the symbol, serial number and date of manufacture of the product. Marking is applied to the cylindrical surface of the connecting fittings by the shock method or by glueing the label. | ☐ Yes ☐ No |  |
| **2.9** | **Requirements for containers and packaging** |  |  |
| 2.9.1 | The goods shall be shipped in the packaging corresponding to the nature of delivered goods. The packaging shall meet the current regulations and standards and ensure safety and intactness of cargoes during transportation to the destination and unloading transport means. | ☐ Yes ☐ No |  |
| 2.9.2 | The transport containers shall meet the requirements aimed at protection of these cargoes and retention of clear marking, which are to be observed during their stowage (packing), loading, carriage (with meeting temperature conditions) unloading, with the possibility of performance of reloading operations by mechanized method. | ☐ Yes ☐ No |  |
| 2.9.3 | Compensators must be delivered in a container. Basic, additional and informational inscriptions and manipulative signs should be applied on the container: “Fragile. Caution”, “Top”, “Open here”. | ☐ Yes ☐ No |  |
| 2.9.4 | The internal cavity of the compensators and seals must be cleaned of foreign objects, the products are preserved and packed in boxes. | ☐ Yes ☐ No |  |
| 2.9.5 | The containers are made according to the documentation of the manufacturer of compensators and seals. (By agreement with the consumer, other packaging, packaging and protection options are allowed, ensuring the products are stored within the guaranteed storage period). | ☐ Yes ☐ No |  |
| 2.9.6 | Each package shall contain the appropriate packing list indicating the names and quantities of the products, net and gross weight of this package, name of manufacturer and supplier. The value of containers shall be included in the goods price. The containers are of non-returnable type. | ☐ Yes ☐ No |  |
| 2.9.7 | The goods shall be transported and stored according to DBNВ.2.5-39: 2008 “Heat networks” and in compliance with manufacturer’s recommendations. | ☐ Yes ☐ No |  |
| 2.9.8 | The Supplier shall bear the full responsibility for transportation and unloading equipment and materials on the site of performance of works on replacement of sections of the heating networks. | ☐ 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 |

**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 within 90 days after contract subscription. 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) 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. Pre-insulated pipes and shaped products**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 1.** | **PRE-INSULATED PIPES AND SHAPED PRODUCTS** |  |  |
| **Item 1.1** | **Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm - 246 PCS** | ☐ Yes ☐ No |  |
| **Item 1.2** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 130 PCS** | ☐ Yes ☐ No |  |
| **Item 1.3** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 3 PCS** | ☐ Yes ☐ No |  |
| **Item 1.4** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 4 PCS** | ☐ Yes ☐ No |  |
| **Item 1.5** | **Sliding support for pre-insulated pipes DN600/800 - 156 PCS** | ☐ Yes ☐ No |  |
| **Item 1.6** | **Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 20 PCS** | ☐ Yes ☐ No |  |
| **Item 1.7** | **Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=250 mm - 7 PCS** | ☐ Yes ☐ No |  |
| **Item 1.8** | **Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 14 PCS** | ☐ Yes ☐ No |  |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **All goods and equipment shall be delivered in compliance with the current Ukrainian laws, regulations and rules, and shall also meet the appropriate European and international standards and certificate of quality to ISO 9001. In case some differences exist between the national and international standards, the standards with stricter requirements shall be applied. All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or European standards.** | ☐ Yes ☐ No |  |
| 1.1.1 | Producer of the equipment must be ISO 9001:2015 certified and the bidder must provide the certificate | ☐ Yes ☐ No |  |
| 1.1.2 | All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or equivalent European standards. | ☐ Yes ☐ No |  |
| 1.1.3 | All materials and goods manufactured abroad and imported to Ukraine shall meet either EN standards or equivalent Ukrainian DSTU standards. The bidder may provide either certificates of conformity or a declaration of equivalency supported by third-party verification (testing). | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must be in continuous business of supplying of the offered or equivalent equipment for at least past 2 years.** | ☐ Yes ☐ No |  |
| **1.3** | **The Bidder must have experience in the delivery of similar equipment in Ukraine or EU/EEA countries and must provide evidence (contracts, POs, certificates of completion, etc) of successful implementation of at least 2 contracts for supply of the offered or equivalent equipment realised in the past years.** | ☐ Yes ☐ No |  |
| **1.4** | **If the goods are delivered by an intermediary, the intermediary shall provide the required manufacturer's documentation without any modification.** | ☐ 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 center shall provide maintenance, repair services, and/or replacement of the equipment no later than 30 (thirty) calendar days from the date of receipt of written or email notification from an authorized party. The name of the company, address, telephone and fax numbers, and email 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 a minimum of 1 year, covering manufacturing defects and labor charges. The Supplier must provide a detailed warranty policy, including terms for warranty claims and service procedures.** | ☐ 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 |  |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.9.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.9.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.9.4 | Information on Goods | ☐ Yes ☐ No |  |
| 1.9.4.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.9.4.2 | Type and model | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery (all documentation shall be made in Ukrainian, the delivery is not considered to be completed until the documentation pointed out below is delivered in full and accepted by the customer):** |  |  |
| 1.10.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.10.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.10.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.10.4 | The necessary requirements for disposal and recycling materials used for district-heating pipes shall be pointed out in the manufacturer’s documentation | ☐ Yes ☐ No |  |
| 1.10.5 | Instructions on transportation and storage of equipment and materials | ☐ Yes ☐ No |  |
| 1.10.6 | Information on Goods | ☐ Yes ☐ No |  |
| 1.10.6.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.10.6.2 | Type and model | ☐ Yes ☐ No |  |
| 1.10.6.3 | Serial number | ☐ Yes ☐ No |  |
| **1.11** | **All the equipment must be new** | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** |  |  |
| **2.1** | **General requirements for pipes, components and equipment** |  |  |
| 2.1.1 | All (preinsulated) components of pipeline system, such as straight steel electric-welded pipes, kits for insulation of joints, heat-shrink end caps, metal end caps, etc., shall be delivered as a single system solution, in order to be of the same quality, diameters, wall thickness as the pipes and to meet the same requirements for strength, insulation and tightness. | ☐ Yes ☐ No |  |
| 2.1.2 | The Purchaser shall be entitled to visit the chosen manufacturer of preinsulated steel pipes and send any part of pipeline or other object for independent assessment. Any attempt to use pipes, valves, expansion joints or other components used earlier somewhere, whether it is occasional or not, will be considered as fraud. | ☐ Yes ☐ No |  |
| 2.1.3 | All parameters of the heat conducting steel pipes, components and products in insulation shall be based on the following conditions: | ☐ Yes ☐ No |  |
| 2.1.3.1 | Calculated pressure - not less than 1.6 MPa | ☐ Yes ☐ No |  |
| 2.1.3.2 | Maximum pressure - not less than 2.5 MPa | ☐ Yes ☐ No |  |
| 2.1.3.3 | Operating temperature - 118 (124)°C | ☐ Yes ☐ No |  |
| 2.1.3.4 | Maximum temperature - 130°C | ☐ Yes ☐ No |  |
| 2.1.3.5 | Air temperature (limit values) - "-37°C … +37°C" | ☐ Yes ☐ No |  |
| 2.1.3.6 | Calculated temperature - "-23°C" | ☐ Yes ☐ No |  |
| 2.1.4 | The pipes shall be resistant to internal corrosion caused by water of district heat supply system with the below characteristics (The Bidder shall take into consideration the above quality of the district heat supply system water): | ☐ Yes ☐ No |  |
| 2.1.4.1 | Carbonate index: ≤1.0 (mEq/l)2 | ☐ Yes ☐ No |  |
| 2.1.4.2 | Dissolved CO2: 0 | ☐ Yes ☐ No |  |
| 2.1.4.3 | Dissolved oxygen: <20 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.4 | pH: 8.3-9.5 | ☐ Yes ☐ No |  |
| 2.1.4.5 | Iron: <0.5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.6 | Suspended solids: <5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.7 | Oil products: <1 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.5 | The Bidder shall guarantee that the declared requirements will be met to provide operation for at least 25 years in case of the maximum calculated temperature. | ☐ Yes ☐ No |  |
| **2.2** | **Technical requirements for pipes** |  |  |
| 2.2.1 | The assembled preinsulated pipes shall meet the requirements of European standards EN 253,EN 448 for European manufacturers (compliance must be reflected either in certificates or in the equipment's passport/manual) and of Ukrainian standards DSTU B V.2.5-31:2007 or DSTU EN 253:2016 for Ukrainian manufacturers and be certified by authorized for certification Ukrainian agency (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.2 | The heat-conducting steel pipes may be seamless or welded with longitudinal weld and shall meet standards EN 10217-2 (P235GH), EN 10217-5 (P235 GH) or standard EN 10220 with error for diameter according to EN 253:2009. The pipes manufactured in Ukraine shall meet the requirements of DSTU 8938:2019, DSTU 8939:2019, DSTU 8943:2019, DSTU 9219:2023, GOST 550, GOST 8731, and may be used other pipes allowed by DNAOP 0.00-1.11, DBN 2.04.07 and DSTU B V.2.5-31:2007. The compliance with the above standards must be reflected either in certificates or in the equipment's passport/manual. | ☐ Yes ☐ No |  |
| 2.2.3 | The pipes shall be made of Ст3сп5 steel or an equivalent or superior grade of steel that meets or exceeds the requirements of NPAOP 0.00-1.81-18 “Rules of Labor Protection During Operation of Pressurized Equipment”. The equivalent or superior grade steel must have comparable or better mechanical properties and chemical composition, ensuring the pipes are suitable for high-pressure and high-temperature applications. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.4 | The wall thickness of the steel pipes must be no less than the minimum nominal value specified in EN 253 for the corresponding diameters. The supplier must provide detailed specifications, including engineering drawings and test reports, demonstrating that the wall thickness of the supplied pipes meets or exceeds these standards. | ☐ Yes ☐ No |  |
| 2.2.5 | The surface of the steel pipe (both external and internal) before applying insulation should be thoroughly cleaned and degreased, electroplating on the surface is applied anti-corrosion coating. The quality of the preparation of the steel pipe to the insulation is to be confirmed by the manufacturer's certificates (including mandatory ultrasonic flaw detection). | ☐ Yes ☐ No |  |
| 2.2.6 | Besides, according to DSTU B V.2.5-31:2007, both ends of the pipe shall have no insulation to the length of 220 mm with error of ± 5 mm. This requirement shall be applied to all kinds of pipes and shaped parts to be delivered. | ☐ Yes ☐ No |  |
| 2.2.7 | Each section of the pipe must be marked by the manufacturer - by any indelible method on the polyethylene shell at a distance of at least 200 mm from the end of the insulation, with the information on the size of the pipe pipe, the trademark or the name of the manufacturer's plant, lot number and production date. In addition, each pipe on both ends must have a duplicate sticker (moisture-proof) - quality control. | ☐ Yes ☐ No |  |
| 2.2.8 | The polyurethane insulation of preinsulated pipes shall comply with the requirements of EN253 and DSTU EN 253:2016. The thermal conductivity shall not exceed 0.029 W/(m×K) when measured at a temperature of 50°C. The insulation must also comply with relevant fire safety standards. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.9 | The foam of the polyurethane insulation shall have a zero ozone-depleting potential. To this end, the hydrochlorofluorocarbons (HCFC) or their hydrogenated derivatives shall not be used. The foamed polyurethane shall be manufactured with the use of the foam former on the basis of cyclopentane or water-based blowing agent. | ☐ Yes ☐ No |  |
| 2.2.10 | Pipes should be suitable to be used for the heat carrier with the below characteristics: | ☐ Yes ☐ No |  |
| 2.2.10.1 | Heat carrier temperature for continuous operation: 130°C | ☐ Yes ☐ No |  |
| 2.2.10.2 | Heat conductivity at 50°C: not exceed 0.029 W/(m×K) | ☐ Yes ☐ No |  |
| 2.2.10.3 | Average density: not less than 60 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.11 | The outer casing of the pipelines of types ST/PE shall be manufactured of high-density polyethylene and meet the requirements of DSTU B V.2.5-31:2007 and EN 253:2009. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). The main requirements for polyethylene are presented below: | ☐ Yes ☐ No |  |
| 2.2.11.1 | Material - High-density polyethylene, at least PE-80 | ☐ Yes ☐ No |  |
| 2.2.11.2 | Density - > 940 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.12 | Alternatives to HDPE may be considered if they provide equivalent or superior durability, thermal insulation, and compliance with the specified standards. Bidders proposing alternative materials must provide detailed technical specifications and third-party test results demonstrating compliance. | ☐ Yes ☐ No |  |
| 2.2.13 | In case of arising any doubts about characteristics of the products and values pointed out in the certificate, the Purchaser reserves the right to conduct laboratory study of the delivered products. The Purchaser shall pay the results of the study. In case of incompliance of the appropriate characteristics, the Supplier shall compensate to the Purchaser these expenses. | ☐ Yes ☐ No |  |
| 2.2.14 | The Bidder shall clearly specify the actual value of thermal conductivity for the foam insulation used in the offered goods (including pipes, bends, and shaped parts) in their technical offer. This value must be supported by appropriate documentation, such as test certificates from an accredited testing laboratory. These documents should provide detailed test results and confirm that the thermal conductivity meets the specified requirements. | ☐ Yes ☐ No |  |
| 2.2.15 | The pre-insulated pipes should be 12 meter in length. The working design will determine the minimum number of joints that will be introduced between the sections of the pipeline. Each pipe must be equipped with rustproof hoods (both ends). | ☐ Yes ☐ No |  |
| **2.3** | **General technical requirements to products and components** |  |  |
| 2.3.1 | The types and designs of shaped products, as well as methods of their control, shall conform to DSTU B V.2.5-31:2007 and EN 488:1994, ensuring compatibility with pre-insulated bonded pipe systems for underground hot water networks. Bidders are allowed to propose equivalent designs that meet or exceed these standards, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.2 | The polyethylene (PE) outer casings of the products of the ST/PE type shall be manufactured by butt welding of segments using a hot tool or manual extruder according to approved technological documentation. The PE casing segments shall be made of polyethylene compositions with consistent long-term mechanical properties. Alternative manufacturing methods that ensure equivalent or superior quality and compliance with the specified standards may be considered, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.3 | The values of melt flow index (MFI) of polyethylene, welded segments and filler material used shall not differ more than by 0.5 g/10 minutes. The MFI shall be determined according to DSTU EN ISO 1133-2:2022. | ☐ Yes ☐ No |  |
| 2.3.4 | The displacement of the outer casing sections of the SТ/PЕ products shall not exceed 30% of casing thickness in the cross section of welded joint. | ☐ Yes ☐ No |  |
| 2.3.5 | All pipeline fittings shall meet the requirements of EN 253, EN 448, EN 489, and DSTU B V.2.5-31:2007, ensuring compatibility and performance in pre-insulated bonded pipe systems. Bidders proposing alternative fittings that meet or exceed these standards must provide detailed technical specifications and third-party test results confirming compliance. | ☐ Yes ☐ No |  |
| 2.3.6 | The filler materials used for welding main components of SТ/PЕ products shall have mechanical properties close to those of the base material of the heat-conducting pipes. All kinds of fusion welding, arc welding with coated electrodes and arc gas-shielded welding may be used. | ☐ Yes ☐ No |  |
| 2.3.7 | During filling the outer casings of the products of SТ/PЕ types, the foamed polyurethane shall not penetrate through the weld. | ☐ Yes ☐ No |  |
| **2.4** | **Technical requirements to bend** |  |  |
| 2.4.1 | The design and dimensions of the knee ST/PE types must, in accordance with DSTU B V.2.5-31: 2007, conform to drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - steel pipe; 2 - insulation from polyurethane foam; 3 - a shell of polyethylene or metal resistant to atmospheric corrosion; 4 - centralizers; 5 - knee made of steel; 6 - insulating tube according to GOST 22056; 7 - conductors of the signalling system of the damage to the conductive pipe and / or the shell | ☐ Yes ☐ No |  |
| 2.4.2 | The standard bend angles are 15, 30, 45, 60 and 90° | ☐ Yes ☐ No |  |
| 2.4.3 | The round-bent bend shall be factory made with bend radius not less than one pipeline diameter. | ☐ Yes ☐ No |  |
| 2.4.4 | Isolation with foam polyurethane must meet the requirements of DSTU B V.2.5-31: 2007: "Pipes for thermal networks with thermal insulation from polyurethane foam and protective cover from polyethylene. General specifications". The polyurethane foam should be made using a cyclopentane-based foaming agent or a water-based foaming agent. | ☐ Yes ☐ No |  |
| 2.4.5 | The outer protective shell must be made of high-density polyethylene (minimum PE80). | ☐ Yes ☐ No |  |
| **2.5** | **Technical requirements to supports for pipelines** |  |  |
| 2.5.1 | The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.5.2 | The details of the supports should be made of sheet, strip, or round rolled materials that meet or exceed the quality and performance requirements specified in GOST 1577-93, DSTU ISO 4995:2015, DSTU 4747:2007, DSTU 8804:2018, DSTU 8803:2018, DSTU 8540:2015, DSTU 9218:2023, DSTU 9219:2023, DSTU 8938:2019, and DSTU 8939:2019. Bidders may propose alternative materials that provide equivalent or superior performance, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.3 | Steel grade for the parts of the supports should correspond to the below parameters: | ☐ Yes ☐ No |  |
| 2.5.3.1 | Steel grade 20, GOST 1050-88, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.2 | Steel grade 35, GOST 1050-89, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.3 | Steel grade: 35Х, 40Х; GOST 4543-71; minimum design temperature allowed: -50°С | ☐ Yes ☐ No |  |
| 2.5.3.4 | Steel grade: 09Г2С; GOST 4543-71; minimum design temperature allowed: -70°С | ☐ Yes ☐ No |  |
| 2.5.4 | Types and sizes of welds should be taken according to GOST 5264-80 and DSTU ISO/TR 17671-1:2015. | ☐ Yes ☐ No |  |
| 2.5.5 | For welding of supports, welding materials are used according to GOST 9467-75. | ☐ Yes ☐ No |  |
| 2.5.6 | The quality of welds must be certified by the manufacturer. Certification should include detailed test results demonstrating compliance with the specified standards for weld strength and durability. Bidders may provide alternative certification methods that ensure equivalent verification of weld quality. | ☐ Yes ☐ No |  |
| 2.5.7 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternatives that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.8 | The type of anti-corrosive coating for bolts and nuts should be selected according to GOST 9.303-84, depending on the operating conditions, and specified in the work drawings. Bidders may propose alternative anti-corrosive coatings that provide equivalent or superior protection, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| **2.6** | **Technical requirements for sliding support for pre-insulated pipes** |  |  |
| 2.6.1 | The design and dimensions of the sliding support shall be in accordance with the below drawing, the table and the design documentation approved in accordance with the established procedure. (Note: the product “sliding support” does not contain isolation and belongs to products of ST/PE types conditionally). | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
| 2.6.2 | Table of sizes for the supports | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | \* Size for reference  Note 1. The standard sizes of the products not specified in the table must conform to the design documentation of the manufacturer, approved in accordance with the established procedure.  Note 2. The specified linear gradient delineations in Table should have a tolerance of no more than 1% of the size data. | ☐ Yes ☐ No |  |
| 2.6.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternatives that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.6.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.6.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.7** | **Technical requirements for fixed support straight with thermal insulation of foamed polyurethane.** |  |  |
| 2.7.1 | The pipelines’ fixed supports shall be manufactured according to the requirements of the specification and working drawings approved with the use of established. The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.7.2 | The pipelines’ fixed supports shall correspond to the drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - shell of polyethylene or metal, resistant to atmospheric corrosion; 2 - a steel pipe; C - conductors of the signaling system of the damage of the pipe and (or) shell; 4 - centralizer; 5 - insulation from polyurethane foam; 6 - the support is immovable; The insulating tube according to GOST 22056 is not conventionally shown in the above drawing. | ☐ Yes ☐ No |  |
| 2.7.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternative that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.7.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.7.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.8** | **Technical requirements to gland expansion compensator** |  |  |
| 2.8.1 | The calculated compensating capability of the gland expansion compensator shall be considered by 50 mm less than the capability provided for by the expansion joint design. | ☐ Yes ☐ No |  |
| 2.8.2 | Drawing is presented below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - gruntbuksa, 2 - stuffing box seal, 3 - shaped pipe, 4 - pipe, 5 - thrust ring. | ☐ Yes ☐ No |  |
| 2.8.3 | For sealing the gland expansion compensator, grease- or graphite impregnated hemp or linen strand is used. The expansion joints of this type may be connected with pipeline ends by butt welding. In this case, the flanges shall not be welded to the ends o the housing and movable internal sleeve being connected, and edges of the sleeves shall be treated for welding. | ☐ Yes ☐ No |  |
| 2.8.4 | The gland expansion compensator for compensation of thermal elongation of pipelines for steam and hot water is designed for: | ☐ Yes ☐ No |  |
| 2.8.4.1 | Operating pressure: 2.5 MPa; | ☐ Yes ☐ No |  |
| 2.8.4.2 | Operating temperature, not more than: 130°С; | ☐ Yes ☐ No |  |
| 2.8.4.3 | Main design material: steel 3сп5 / 09 Г2С. | ☐ Yes ☐ No |  |
| 2.8.5 | The gland expansion compensator are covered by the requirements of the NPAOP 0.00-1.81-18 “Rules of labor protection during operation of pressurized equipment”. | ☐ Yes ☐ No |  |
| 2.8.6 | The marking of compensators and seals should contain the trademark of the manufacturer, the symbol, serial number and date of manufacture of the product. Marking is applied to the cylindrical surface of the connecting fittings by the shock method or by glueing the label. | ☐ Yes ☐ No |  |
| **2.9** | **Requirements for containers and packaging** |  |  |
| 2.9.1 | The goods shall be shipped in the packaging corresponding to the nature of delivered goods. The packaging shall meet the current regulations and standards and ensure safety and intactness of cargoes during transportation to the destination and unloading transport means. | ☐ Yes ☐ No |  |
| 2.9.2 | The transport containers shall meet the requirements aimed at protection of these cargoes and retention of clear marking, which are to be observed during their stowage (packing), loading, carriage (with meeting temperature conditions) unloading, with the possibility of performance of reloading operations by mechanized method. | ☐ Yes ☐ No |  |
| 2.9.3 | Compensators must be delivered in a container. Basic, additional and informational inscriptions and manipulative signs should be applied on the container: “Fragile. Caution”, “Top”, “Open here”. | ☐ Yes ☐ No |  |
| 2.9.4 | The internal cavity of the compensators and seals must be cleaned of foreign objects, the products are preserved and packed in boxes. | ☐ Yes ☐ No |  |
| 2.9.5 | The containers are made according to the documentation of the manufacturer of compensators and seals. (By agreement with the consumer, other packaging, packaging and protection options are allowed, ensuring the products are stored within the guaranteed storage period). | ☐ Yes ☐ No |  |
| 2.9.6 | Each package shall contain the appropriate packing list indicating the names and quantities of the products, net and gross weight of this package, name of manufacturer and supplier. The value of containers shall be included in the goods price. The containers are of non-returnable type. | ☐ Yes ☐ No |  |
| 2.9.7 | The goods shall be transported and stored according to DBNВ.2.5-39: 2008 “Heat networks” and in compliance with manufacturer’s recommendations. | ☐ Yes ☐ No |  |
| 2.9.8 | The Supplier shall bear the full responsibility for transportation and unloading equipment and materials on the site of performance of works on replacement of sections of the heating networks. | ☐ 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 |

**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 within 90 days after contract subscription. 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) 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. Pre-insulated pipes and shaped products**

| **N** | **UNOPS minimum technical requirements** | **Is Bid Compliant?** Bidder to complete | **Details of the offered goods.** Bidder to complete |
| --- | --- | --- | --- |
| **Lot 1.** | **PRE-INSULATED PIPES AND SHAPED PRODUCTS** |  |  |
| **Item 1.1** | **Steel pipe with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, L = 12,000 mm - 170 PCS** | ☐ Yes ☐ No |  |
| **Item 1.2** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 90° - 20 PCS** | ☐ Yes ☐ No |  |
| **Item 1.3** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 60° - 2 PCS** | ☐ Yes ☐ No |  |
| **Item 1.4** | **Bend with polyurethane foam thermal insulation, protective polyethylene outer casing, with alarm system ST/PE DN600×8.0/800, 45° - 2 PCS** | ☐ Yes ☐ No |  |
| **Item 1.5** | **Sliding support for pre-insulated pipes DN600/800 - 58 PCS** | ☐ Yes ☐ No |  |
| **Item 1.6** | **Fixed support straight with thermal insulation of foamed polyurethane and protective polyethylene outer casing, with alarm system ST/PE DN600×9.0/800 - 6 PCS** | ☐ Yes ☐ No |  |
| **Item 1.7** | **Gland expansion compensator one-sided DN600, PN 25, compensating ability Δ=450 mm - 4 PCS** | ☐ Yes ☐ No |  |
| **1** | **General qualification requirements** |  |  |
| **1.1** | **All goods and equipment shall be delivered in compliance with the current Ukrainian laws, regulations and rules, and shall also meet the appropriate European and international standards and certificate of quality to ISO 9001. In case some differences exist between the national and international standards, the standards with stricter requirements shall be applied. All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or European standards.** | ☐ Yes ☐ No |  |
| 1.1.1 | Producer of the equipment must be ISO 9001:2015 certified and the bidder must provide the certificate | ☐ Yes ☐ No |  |
| 1.1.2 | All preinsulated pipes, shaped products and connections shall meet the requirements of Ukrainian or equivalent European standards. | ☐ Yes ☐ No |  |
| 1.1.3 | All materials and goods manufactured abroad and imported to Ukraine shall meet either EN standards or equivalent Ukrainian DSTU standards. The bidder may provide either certificates of conformity or a declaration of equivalency supported by third-party verification (testing). | ☐ Yes ☐ No |  |
| **1.2** | **The Bidder must be in continuous business of supplying of the offered or equivalent equipment for at least past 2 years.** | ☐ Yes ☐ No |  |
| **1.3** | **The Bidder must have experience in the delivery of similar equipment in Ukraine or EU/EEA countries and must provide evidence (contracts, POs, certificates of completion, etc) of successful implementation of at least 2 contracts for supply of the offered or equivalent equipment realised in the past years.** | ☐ Yes ☐ No |  |
| **1.4** | **If the goods are delivered by an intermediary, the intermediary shall provide the required manufacturer's documentation without any modification.** | ☐ 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 center shall provide maintenance, repair services, and/or replacement of the equipment no later than 30 (thirty) calendar days from the date of receipt of written or email notification from an authorized party. The name of the company, address, telephone and fax numbers, and email 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 a minimum of 1 year, covering manufacturing defects and labor charges. The Supplier must provide a detailed warranty policy, including terms for warranty claims and service procedures.** | ☐ 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 |  |
| **1.9** | **The following documents must be provided with the Bid:** | ☐ Yes ☐ No |  |
| 1.9.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.9.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.9.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.9.4 | Information on Goods | ☐ Yes ☐ No |  |
| 1.9.4.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.9.4.2 | Type and model | ☐ Yes ☐ No |  |
| **1.10** | **The following documentation must be provided with the goods upon delivery (all documentation shall be made in Ukrainian, the delivery is not considered to be completed until the documentation pointed out below is delivered in full and accepted by the customer):** |  |  |
| 1.10.1 | Certificate of conformity for each of the items | ☐ Yes ☐ No |  |
| 1.10.2 | Health certificate for foamed polyurethane | ☐ Yes ☐ No |  |
| 1.10.3 | All required manufacturer’s certificates and quality guarantees | ☐ Yes ☐ No |  |
| 1.10.4 | The necessary requirements for disposal and recycling materials used for district-heating pipes shall be pointed out in the manufacturer’s documentation | ☐ Yes ☐ No |  |
| 1.10.5 | Instructions on transportation and storage of equipment and materials | ☐ Yes ☐ No |  |
| 1.10.6 | Information on Goods | ☐ Yes ☐ No |  |
| 1.10.6.1 | Manufacturer’s name and address | ☐ Yes ☐ No |  |
| 1.10.6.2 | Type and model | ☐ Yes ☐ No |  |
| 1.10.6.3 | Serial number | ☐ Yes ☐ No |  |
| **1.11** | **All the equipment must be new** | ☐ Yes ☐ No |  |
| **2** | **Technical requirements** |  |  |
| **2.1** | **General requirements for pipes, components and equipment** |  |  |
| 2.1.1 | All (preinsulated) components of pipeline system, such as straight steel electric-welded pipes, kits for insulation of joints, heat-shrink end caps, metal end caps, etc., shall be delivered as a single system solution, in order to be of the same quality, diameters, wall thickness as the pipes and to meet the same requirements for strength, insulation and tightness. | ☐ Yes ☐ No |  |
| 2.1.2 | The Purchaser shall be entitled to visit the chosen manufacturer of preinsulated steel pipes and send any part of pipeline or other object for independent assessment. Any attempt to use pipes, valves, expansion joints or other components used earlier somewhere, whether it is occasional or not, will be considered as fraud. | ☐ Yes ☐ No |  |
| 2.1.3 | All parameters of the heat conducting steel pipes, components and products in insulation shall be based on the following conditions: | ☐ Yes ☐ No |  |
| 2.1.3.1 | Calculated pressure - not less than 1.6 MPa | ☐ Yes ☐ No |  |
| 2.1.3.2 | Maximum pressure - not less than 2.5 MPa | ☐ Yes ☐ No |  |
| 2.1.3.3 | Operating temperature - 118 (124)°C | ☐ Yes ☐ No |  |
| 2.1.3.4 | Maximum temperature - 130°C | ☐ Yes ☐ No |  |
| 2.1.3.5 | Air temperature (limit values) - "-37°C … +37°C" | ☐ Yes ☐ No |  |
| 2.1.3.6 | Calculated temperature - "-23°C" | ☐ Yes ☐ No |  |
| 2.1.4 | The pipes shall be resistant to internal corrosion caused by water of district heat supply system with the below characteristics (The Bidder shall take into consideration the above quality of the district heat supply system water): | ☐ Yes ☐ No |  |
| 2.1.4.1 | Carbonate index: ≤1.0 (mEq/l)2 | ☐ Yes ☐ No |  |
| 2.1.4.2 | Dissolved CO2: 0 | ☐ Yes ☐ No |  |
| 2.1.4.3 | Dissolved oxygen: <20 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.4 | pH: 8.3-9.5 | ☐ Yes ☐ No |  |
| 2.1.4.5 | Iron: <0.5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.6 | Suspended solids: <5 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.4.7 | Oil products: <1 mg/dm3 | ☐ Yes ☐ No |  |
| 2.1.5 | The Bidder shall guarantee that the declared requirements will be met to provide operation for at least 25 years in case of the maximum calculated temperature. | ☐ Yes ☐ No |  |
| **2.2** | **Technical requirements for pipes** |  |  |
| 2.2.1 | The assembled preinsulated pipes shall meet the requirements of European standards EN 253,EN 448 for European manufacturers (compliance must be reflected either in certificates or in the equipment's passport/manual) and of Ukrainian standards DSTU B V.2.5-31:2007 or DSTU EN 253:2016 for Ukrainian manufacturers and be certified by authorized for certification Ukrainian agency (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.2 | The heat-conducting steel pipes may be seamless or welded with longitudinal weld and shall meet standards EN 10217-2 (P235GH), EN 10217-5 (P235 GH) or standard EN 10220 with error for diameter according to EN 253:2009. The pipes manufactured in Ukraine shall meet the requirements of DSTU 8938:2019, DSTU 8939:2019, DSTU 8943:2019, DSTU 9219:2023, GOST 550, GOST 8731, and may be used other pipes allowed by DNAOP 0.00-1.11, DBN 2.04.07 and DSTU B V.2.5-31:2007. The compliance with the above standards must be reflected either in certificates or in the equipment's passport/manual. | ☐ Yes ☐ No |  |
| 2.2.3 | The pipes shall be made of Ст3сп5 steel or an equivalent or superior grade of steel that meets or exceeds the requirements of NPAOP 0.00-1.81-18 “Rules of Labor Protection During Operation of Pressurized Equipment”. The equivalent or superior grade steel must have comparable or better mechanical properties and chemical composition, ensuring the pipes are suitable for high-pressure and high-temperature applications. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.4 | The wall thickness of the steel pipes must be no less than the minimum nominal value specified in EN 253 for the corresponding diameters. The supplier must provide detailed specifications, including engineering drawings and test reports, demonstrating that the wall thickness of the supplied pipes meets or exceeds these standards. | ☐ Yes ☐ No |  |
| 2.2.5 | The surface of the steel pipe (both external and internal) before applying insulation should be thoroughly cleaned and degreased, electroplating on the surface is applied anti-corrosion coating. The quality of the preparation of the steel pipe to the insulation is to be confirmed by the manufacturer's certificates (including mandatory ultrasonic flaw detection). | ☐ Yes ☐ No |  |
| 2.2.6 | Besides, according to DSTU B V.2.5-31:2007, both ends of the pipe shall have no insulation to the length of 220 mm with error of ± 5 mm. This requirement shall be applied to all kinds of pipes and shaped parts to be delivered. | ☐ Yes ☐ No |  |
| 2.2.7 | Each section of the pipe must be marked by the manufacturer - by any indelible method on the polyethylene shell at a distance of at least 200 mm from the end of the insulation, with the information on the size of the pipe pipe, the trademark or the name of the manufacturer's plant, lot number and production date. In addition, each pipe on both ends must have a duplicate sticker (moisture-proof) - quality control. | ☐ Yes ☐ No |  |
| 2.2.8 | The polyurethane insulation of preinsulated pipes shall comply with the requirements of EN253 and DSTU EN 253:2016. The thermal conductivity shall not exceed 0.029 W/(m×K) when measured at a temperature of 50°C. The insulation must also comply with relevant fire safety standards. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). | ☐ Yes ☐ No |  |
| 2.2.9 | The foam of the polyurethane insulation shall have a zero ozone-depleting potential. To this end, the hydrochlorofluorocarbons (HCFC) or their hydrogenated derivatives shall not be used. The foamed polyurethane shall be manufactured with the use of the foam former on the basis of cyclopentane or water-based blowing agent. | ☐ Yes ☐ No |  |
| 2.2.10 | Pipes should be suitable to be used for the heat carrier with the below characteristics: | ☐ Yes ☐ No |  |
| 2.2.10.1 | Heat carrier temperature for continuous operation: 130°C | ☐ Yes ☐ No |  |
| 2.2.10.2 | Heat conductivity at 50°C: not exceed 0.029 W/(m×K) | ☐ Yes ☐ No |  |
| 2.2.10.3 | Average density: not less than 60 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.11 | The outer casing of the pipelines of types ST/PE shall be manufactured of high-density polyethylene and meet the requirements of DSTU B V.2.5-31:2007 and EN 253:2009. Bidder must provide evidence of the compliance with the above standard (compliance must be reflected either in certificates or in the equipment's passport/manual). The main requirements for polyethylene are presented below: | ☐ Yes ☐ No |  |
| 2.2.11.1 | Material - High-density polyethylene, at least PE-80 | ☐ Yes ☐ No |  |
| 2.2.11.2 | Density - > 940 kg/m3 | ☐ Yes ☐ No |  |
| 2.2.12 | Alternatives to HDPE may be considered if they provide equivalent or superior durability, thermal insulation, and compliance with the specified standards. Bidders proposing alternative materials must provide detailed technical specifications and third-party test results demonstrating compliance. | ☐ Yes ☐ No |  |
| 2.2.13 | In case of arising any doubts about characteristics of the products and values pointed out in the certificate, the Purchaser reserves the right to conduct laboratory study of the delivered products. The Purchaser shall pay the results of the study. In case of incompliance of the appropriate characteristics, the Supplier shall compensate to the Purchaser these expenses. | ☐ Yes ☐ No |  |
| 2.2.14 | The Bidder shall clearly specify the actual value of thermal conductivity for the foam insulation used in the offered goods (including pipes, bends, and shaped parts) in their technical offer. This value must be supported by appropriate documentation, such as test certificates from an accredited testing laboratory. These documents should provide detailed test results and confirm that the thermal conductivity meets the specified requirements. | ☐ Yes ☐ No |  |
| 2.2.15 | The pre-insulated pipes should be 12 meter in length. The working design will determine the minimum number of joints that will be introduced between the sections of the pipeline. Each pipe must be equipped with rustproof hoods (both ends). | ☐ Yes ☐ No |  |
| **2.3** | **General technical requirements to products and components** |  |  |
| 2.3.1 | The types and designs of shaped products, as well as methods of their control, shall conform to DSTU B V.2.5-31:2007 and EN 488:1994, ensuring compatibility with pre-insulated bonded pipe systems for underground hot water networks. Bidders are allowed to propose equivalent designs that meet or exceed these standards, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.2 | The polyethylene (PE) outer casings of the products of the ST/PE type shall be manufactured by butt welding of segments using a hot tool or manual extruder according to approved technological documentation. The PE casing segments shall be made of polyethylene compositions with consistent long-term mechanical properties. Alternative manufacturing methods that ensure equivalent or superior quality and compliance with the specified standards may be considered, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.3.3 | The values of melt flow index (MFI) of polyethylene, welded segments and filler material used shall not differ more than by 0.5 g/10 minutes. The MFI shall be determined according to DSTU EN ISO 1133-2:2022. | ☐ Yes ☐ No |  |
| 2.3.4 | The displacement of the outer casing sections of the SТ/PЕ products shall not exceed 30% of casing thickness in the cross section of welded joint. | ☐ Yes ☐ No |  |
| 2.3.5 | All pipeline fittings shall meet the requirements of EN 253, EN 448, EN 489, and DSTU B V.2.5-31:2007, ensuring compatibility and performance in pre-insulated bonded pipe systems. Bidders proposing alternative fittings that meet or exceed these standards must provide detailed technical specifications and third-party test results confirming compliance. | ☐ Yes ☐ No |  |
| 2.3.6 | The filler materials used for welding main components of SТ/PЕ products shall have mechanical properties close to those of the base material of the heat-conducting pipes. All kinds of fusion welding, arc welding with coated electrodes and arc gas-shielded welding may be used. | ☐ Yes ☐ No |  |
| 2.3.7 | During filling the outer casings of the products of SТ/PЕ and ST/NM types, the foamed polyurethane shall not penetrate through the weld. | ☐ Yes ☐ No |  |
| **2.4** | **Technical requirements to bend** |  |  |
| 2.4.1 | The design and dimensions of the knee ST/PE and ST/NM types must, in accordance with DSTU B V.2.5-31: 2007, conform to drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - steel pipe; 2 - insulation from polyurethane foam; 3 - a shell of polyethylene or metal resistant to atmospheric corrosion; 4 - centralizers; 5 - knee made of steel; 6 - insulating tube according to GOST 22056; 7 - conductors of the signalling system of the damage to the conductive pipe and / or the shell | ☐ Yes ☐ No |  |
| 2.4.2 | The standard bend angles are 15, 30, 45, 60 and 90° | ☐ Yes ☐ No |  |
| 2.4.3 | The round-bent bend shall be factory made with bend radius not less than one pipeline diameter. | ☐ Yes ☐ No |  |
| 2.4.4 | Isolation with foam polyurethane must meet the requirements of DSTU B V.2.5-31: 2007: "Pipes for thermal networks with thermal insulation from polyurethane foam and protective cover from polyethylene. General specifications". The polyurethane foam should be made using a cyclopentane-based foaming agent or a water-based foaming agent. | ☐ Yes ☐ No |  |
| 2.4.5 | The outer protective shell must be made of high-density polyethylene (minimum PE80). | ☐ Yes ☐ No |  |
| **2.5** | **Technical requirements to supports for pipelines** |  |  |
| 2.5.1 | The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.5.2 | The details of the supports should be made of sheet, strip, or round rolled materials that meet or exceed the quality and performance requirements specified in GOST 1577-93, DSTU ISO 4995:2015, DSTU 4747:2007, DSTU 8804:2018, DSTU 8803:2018, DSTU 8540:2015, DSTU 9218:2023, DSTU 9219:2023, DSTU 8938:2019, and DSTU 8939:2019. Bidders may propose alternative materials that provide equivalent or superior performance, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.3 | Steel grade for the parts of the supports should correspond to the below parameters: | ☐ Yes ☐ No |  |
| 2.5.3.1 | Steel grade 20, GOST 1050-88, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.2 | Steel grade 35, GOST 1050-89, minimum design temperature allowed: -40°С | ☐ Yes ☐ No |  |
| 2.5.3.3 | Steel grade: 35Х, 40Х; GOST 4543-71; minimum design temperature allowed: -50°С | ☐ Yes ☐ No |  |
| 2.5.3.4 | Steel grade: 09Г2С; GOST 4543-71; minimum design temperature allowed: -70°С | ☐ Yes ☐ No |  |
| 2.5.4 | Types and sizes of welds should be taken according to GOST 5264-80 and DSTU ISO/TR 17671-1:2015. | ☐ Yes ☐ No |  |
| 2.5.5 | For welding of supports, welding materials are used according to GOST 9467-75. | ☐ Yes ☐ No |  |
| 2.5.6 | The quality of welds must be certified by the manufacturer. Certification should include detailed test results demonstrating compliance with the specified standards for weld strength and durability. Bidders may provide alternative certification methods that ensure equivalent verification of weld quality. | ☐ Yes ☐ No |  |
| 2.5.7 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternatives that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.5.8 | The type of anti-corrosive coating for bolts and nuts should be selected according to GOST 9.303-84, depending on the operating conditions, and specified in the work drawings. Bidders may propose alternative anti-corrosive coatings that provide equivalent or superior protection, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| **2.6** | **Technical requirements for sliding support for pre-insulated pipes** |  |  |
| 2.6.1 | The design and dimensions of the sliding support shall be in accordance with the below drawing, the table and the design documentation approved in accordance with the established procedure. (Note: the product “sliding support” does not contain isolation and belongs to products of ST/PE types conditionally). | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
| 2.6.2 | Table of sizes for the supports | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | \* Size for reference  Note 1. The standard sizes of the products not specified in the table must conform to the design documentation of the manufacturer, approved in accordance with the established procedure.  Note 2. The specified linear gradient delineations in Table should have a tolerance of no more than 1% of the size data. | ☐ Yes ☐ No |  |
| 2.6.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternative that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.6.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.6.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.7** | **Technical requirements for fixed support straight with thermal insulation of foamed polyurethane.** |  |  |
| 2.7.1 | The pipelines’ fixed supports shall be manufactured according to the requirements of the specification and working drawings approved with the use of established. The quality and properties of material and fasteners used for manufacture of supports shall be confirmed by the manufacturer’s certificates. | ☐ Yes ☐ No |  |
| 2.7.2 | The pipelines’ fixed supports shall correspond to the drawing below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - shell of polyethylene or metal, resistant to atmospheric corrosion; 2 - a steel pipe; C - conductors of the signaling system of the damage of the pipe and (or) shell; 4 - centralizer; 5 - insulation from polyurethane foam; 6 - the support is immovable; The insulating tube according to GOST 22056 is not conventionally shown in the above drawing. | ☐ Yes ☐ No |  |
| 2.7.3 | The fasteners (bolts and nuts) shall comply with DIN 933, DIN 931, DSTU EN ISO 4014:2022, DSTU EN 1515-1:2022, DSTU EN 1515-2:2022, and DSTU EN 1515-3:2022. The strength class shall be not lower than 4.6 for bolts and not lower than 4 for nuts. Bidders may propose alternative that provide equivalent or superior strength and durability, provided they submit detailed technical specifications and third-party test results verifying compliance. | ☐ Yes ☐ No |  |
| 2.7.4 | The support may be manufactured from flat rolled stock or tubes according to other standards or specifications, provided the requirements contained therein are not lower than the above ones. | ☐ Yes ☐ No |  |
| 2.7.5 | The climatic version shall be pointed out in the working drawings. | ☐ Yes ☐ No |  |
| **2.8** | **Technical requirements to gland expansion compensator** |  |  |
| 2.8.1 | The calculated compensating capability of the gland expansion compensator shall be considered by 50 mm less than the capability provided for by the expansion joint design. | ☐ Yes ☐ No |  |
| 2.8.2 | Drawing is presented below | ☐ Yes ☐ No |  |
|  |  | ☐ Yes ☐ No |  |
|  | 1 - gruntbuksa, 2 - stuffing box seal, 3 - shaped pipe, 4 - pipe, 5 - thrust ring. | ☐ Yes ☐ No |  |
| 2.8.3 | For sealing the gland expansion compensator, grease- or graphite impregnated hemp or linen strand is used. The expansion joints of this type may be connected with pipeline ends by butt welding. In this case, the flanges shall not be welded to the ends o the housing and movable internal sleeve being connected, and edges of the sleeves shall be treated for welding. | ☐ Yes ☐ No |  |
| 2.8.4 | The gland expansion compensator for compensation of thermal elongation of pipelines for steam and hot water is designed for: | ☐ Yes ☐ No |  |
| 2.8.4.1 | Operating pressure: 2.5 MPa; | ☐ Yes ☐ No |  |
| 2.8.4.2 | Operating temperature, not more than: 130°С; | ☐ Yes ☐ No |  |
| 2.8.4.3 | Main design material: steel 3сп5 / 09 Г2С. | ☐ Yes ☐ No |  |
| 2.8.5 | The gland expansion compensator are covered by the requirements of the NPAOP 0.00-1.81-18 “Rules of labor protection during operation of pressurized equipment”. | ☐ Yes ☐ No |  |
| 2.8.6 | The marking of compensators and seals should contain the trademark of the manufacturer, the symbol, serial number and date of manufacture of the product. Marking is applied to the cylindrical surface of the connecting fittings by the shock method or by glueing the label. | ☐ Yes ☐ No |  |
| **2.9** | **Requirements for containers and packaging** |  |  |
| 2.9.1 | The goods shall be shipped in the packaging corresponding to the nature of delivered goods. The packaging shall meet the current regulations and standards and ensure safety and intactness of cargoes during transportation to the destination and unloading transport means. | ☐ Yes ☐ No |  |
| 2.9.2 | The transport containers shall meet the requirements aimed at protection of these cargoes and retention of clear marking, which are to be observed during their stowage (packing), loading, carriage (with meeting temperature conditions) unloading, with the possibility of performance of reloading operations by mechanized method. | ☐ Yes ☐ No |  |
| 2.9.3 | Compensators must be delivered in a container. Basic, additional and informational inscriptions and manipulative signs should be applied on the container: “Fragile. Caution”, “Top”, “Open here”. | ☐ Yes ☐ No |  |
| 2.9.4 | The internal cavity of the compensators and seals must be cleaned of foreign objects, the products are preserved and packed in boxes. | ☐ Yes ☐ No |  |
| 2.9.5 | The containers are made according to the documentation of the manufacturer of compensators and seals. (By agreement with the consumer, other packaging, packaging and protection options are allowed, ensuring the products are stored within the guaranteed storage period). | ☐ Yes ☐ No |  |
| 2.9.6 | Each package shall contain the appropriate packing list indicating the names and quantities of the products, net and gross weight of this package, name of manufacturer and supplier. The value of containers shall be included in the goods price. The containers are of non-returnable type. | ☐ Yes ☐ No |  |
| 2.9.7 | The goods shall be transported and stored according to DBNВ.2.5-39: 2008 “Heat networks” and in compliance with manufacturer’s recommendations. | ☐ Yes ☐ No |  |
| 2.9.8 | The Supplier shall bear the full responsibility for transportation and unloading equipment and materials on the site of performance of works on replacement of sections of the heating networks. | ☐ 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 |

**C3. 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 within 90 days after contract subscription. 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) 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 |  |

**D. Inspections and tests**

The following inspections and tests shall be performed:

(i) The Supplier shall perform all needed tests before the shipment to confirm that the goods meet the Purchaser requirements. Documented confirmation of such tests has to be sent to the Purchaser before the shipment;

(ii) The Purchaser will check the availability of Compliance Certificates issued for equipment supplied;

(ііі) The Supplier shall demonstrate that the software has been properly installed on the corresponding equipment;

(іv) The Purchaser (with the assistance of the Supplier) will check the functionality/operability and the compliance of main characteristics of all items of equipment with Technical Requirements. If the consumables should be used for equipment checking - they must be provided by the cost of the Supplier.

UNOPS or its representative may inspect and/or test any or all items of the goods to confirm their conformity to the contract, prior to dispatch from the supplier’s premises. Such inspection and clearance will not prejudice the right of the consignee to inspect and test the goods on receipt at destination.

If the goods fail to meet the laid down specifications, the supplier shall take immediate steps to remedy the deficiency or replace the defective goods to the satisfaction of the purchaser.