

APPROVED BY
Deputy general director
RUE «Vitebskenergo»

_____ P.I. Kharitonov

«__» _____ 2026

TECHNICAL SPECIFICATION

for the purchase of a set of 4th-generation winter energy-saving greenhouses designed for growing vegetable crops (cucumbers, tomatoes, peppers) under intensive artificial lighting conditions on a year-round basis (hereinafter referred to as «Product») for the project: « Construction of a building for specialized crop production, energy-efficient winter greenhouses, in the settlement of Chernoruchye-1, Polotsk District» (hereinafter referred to as the «Project»), with an area of 17.59 hectares in the Vesna-energo branch of the RUE «Vitebskenergo».

1. Project name:

1. «Construction of a building for specialized crop production, energy-efficient winter greenhouses, in the settlement of Chernoruchye-1, Polotsk District».

2. This assignment establishes technical requirements and defines the conditions for the procurement of the goods.

3. Purpose of the Product – a set of 4th-generation winter energy-saving greenhouses designed for growing vegetable crops (cucumbers, tomatoes, peppers) under intensive artificial lighting conditions on a year-round basis.

4. To ensure the required conditions upon delivery:

- the equipment and components of the goods must be new and never previously used;
- the equipment must comply with all the modern requirements, regulations, and other normative documents, as well as meet design and aesthetic standards;
- the product's design must be calculated in accordance with the requirements of Construction Code 3.02.10-2020 and other regulatory acts of the Republic of Belarus;
- the offered product must be integrated with the supporting structures of the greenhouse set and, in terms of its functional purpose, must correspond to the type of agricultural crops being grown: tomatoes, cucumbers, peppers;
- the layout design of the greenhouse block must correspond to the greenhouse block layout approved in the investment justification;

5. Delivery term: the Product is delivered in batches. Each batch of the Product must contain a sufficient volume of the Product required for the construction of each stage of the Project, including:

5.1. I-st phase of the Project's construction is a necessary part of the set of winter energy-saving greenhouses for a construction area of 4 hectares, including a seedling department with an integrated boiler room. The delivery term is till October 1, 2027.

5.2. II-nd phase of the Project's construction is a necessary part of the set of winter energy-saving greenhouses for a construction area of 6 hectares. The delivery term is till January 1, 2028.

5.3. III-rd phase of the Project's construction is a necessary part of the set of winter energy-saving greenhouses for a construction area of 7,59 hectares. The delivery term is till April 1, 2028.

6. Delivery location: Polotsk District, village of Chernoruchye -1.

7. The equipment set must include:

7.1. greenhouse's block.

7.2. technological systems and equipment for operating a greenhouse.

7.3. A set of MS(Metal Structures) and MDS(Metal Detailing Structures) of the proposed design. The greenhouses operate 24/7 throughout the year.

8. Technical requirements for the purchase of a set of 4th-generation winter energy-saving greenhouses designed for growing vegetable crops (cucumbers, tomatoes, peppers) under intensive artificial lighting conditions on a year-round basis. These technical requirements are minimum and can be supplemented by the Supplier, providing that the supplement is justified.

№ п/п	Name	Equipment specifications and configuration	Number of sets
1.	Delivery set	1. A greenhouse set of the 4th generation, with an estimated area of 17.59 hectares (for year-round cultivation of tomatoes, cucumbers, and peppers), fully equipped with all the necessary technical and technological internal support systems, which must operate via a single software complex as a single technical unit, including the following components: - the steel supporting frame of the VENLO-type greenhouse complex, with a column layout grid of 8,000 × 4,500 mm, a column height of 6,000 mm, in a complete solution of steel and aluminium structures, with suspended trays; - heating system; - supply and exhaust ventilation system; - the system that ensures the recirculation of air masses inside the greenhouse; - a supplementary lighting system with mandatory dimming and software; - the system of vertical and push-pull double horizontal shading; - drip irrigation system; - CO2 supply system; - evaporative cooling and air humidification system; - the system for the collection, treatment, and reuse of drainage water; - the system for automated movement of finished products to the warehouse; - mobile bench system for seedling departments; - the system for preparing plant residues, used mats, and cubes for disposal; - equipment for a heating attached boiler room for the production of heat and CO2 for a greenhouse complex and hot water supply; - built-in weather station; - system for measuring mat weight and monitoring drainage volume parameters; - other systems and equipment necessary for the operation of the greenhouse complex in automatic mode, as a single technological unit. Other equipment required for the uninterrupted operation of the greenhouse complex: - seed germination chamber; - equipment for product packaging (flowpack, stretch, shrink wrap); - loading and unloading devices (self-propelled and manual); - trolleys for collecting and transporting products; - hydraulic trolleys for plant care for vegetable growers; - hydraulic trolleys for technological needs; - equipment for sanitary access and disinfection systems for personnel access to workstations; - machines for grinding plant residues; - press for mineral substrate; - pulseflock – a hot fog generator for disinfecting of greenhouses;	

	- the necessary portable devices for measuring and monitoring parameters in greenhouses for engineering and agronomic departments; - machinery for chemical treatments and washing of greenhouses; - twine winding machine; - technological equipment for a chemical laboratory; - containers for collecting and removing plant residues from greenhouses; - a trolley for roof repair work; - other technological equipment necessary for the operation of the greenhouse complex. 1.1. The greenhouse block of 17.59 hectares includes: The preliminary explication of the greenhouses and the layout of the sections is an integral part of this technical specification. The greenhouse block layout should be adopted in accordance with Annex 1 to the design brief; it is possible to change the location of the facility and its technological routes, taking into account the progress of the design process and the identification of any necessary changes to the layout of the equipment and technological systems. 1.1.1. 6 sections of 20,700 m² each (4–9 according to the general plan), a central path 4 metres wide, located in the middle of the greenhouses. The size of one section is 103.5 × 200 metres. Each section must have 4 climate zones. 1.1.2. 3 sections, each measuring 10,584 m² (1–3 sections according to the general plan), with a central path 4 metres wide, located in the middle of the greenhouses. The size of one section is 94.5 × 112 metres. Greenhouse № 1 is divided into two equal halves by a glass inner wall and has a common technological path; the irrigation and microclimate maintenance system must be individual for each section. Each section must have 4 climate zones. 1.1.3. 2 seedling departments, each 3,024 m² (10–11 according to the general plan), with hydroponic flooded tables (movable on casters). The department size is 54 × 56 m. Each department has 1 climate zone. The number of tables per 8-m section is 8 (4+4) pieces. The number of plants per m² is no more than 25 pieces. The number of seedling plants in one department is at least 61,000 pieces. The base is made of galvanized metal with hot-dip galvanizing. The table frame is made of aluminum. The pallet is made of ABS plastic with UV protection, ≥3 mm. The supporting galvanized mesh (under the pallet). The filling valves are tidal/ebb. 1.1.4. for vegetable and seedling sections (1–11 according to the general plan), provide internal sensors for solar radiation and illumination. These sensors allow measuring the intensity of sunlight and artificial supplementary lighting, as well as the accumulated total radiation and illumination, with the ability to display and archive data on a climate computer in J/cm² and μmol/(m²·s). 1.1.5. the irrigation section has an area of 8,064 m² (12 according to the general plan). The size of this department is 72 × 112 m, it houses daily water storage tanks and drainage tanks; nutrient solution units with fertilizer tanks; water purification, disinfection, and treatment systems; evaporative cooling and air humidification system and other components and has 1 climate zone.	
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		1.1.6. 2 connecting corridors, with areas of 6,968 m² and 1,008 m². At least 4 climate zones. 1.1.7. The plant layout for an 8-meter span consists of four rows arranged in a 1+1+1+1 pattern, with 160 mm space between plants; the plants are suspended in a V-shape from trellis wires using 200 mm wide "Meteor"-type hanging troughs. The plant density is 3 plants per square meter. 1.1.8. The planned crops for cultivation are tomato, cucumber, and pepper (40/40/20 %). 1.2. Greenhouse structures VENLO type with a frame column layout grid of 8000 x 4500 mm and a column height of 6000 mm. In a complete solution of steel structures, aluminum structures with ventilation transoms and supports. Loads on load-bearing structures shall be determined in accordance with Building Regulations SN 3.02.09-2020 "Agricultural Buildings". Provide brackets for roof maintenance trolleys on the end columns. 1.2.1. The structures are hot-dip galvanized steel, with a galvanizing thickness of at least 100 microns, for unheated structures. 1.2.2. The foundation posts are made of galvanized steel (applied via hot-dip galvanizing; coating thickness $\geq 120 \mu\text{m}$) and feature a flanged connection to the main column. The height of the posts is at least 0.5 meters above ground level. 1.2.3. Hardware and connecting elements — galvanized for assembling steel metal structures; the thickness of the galvanized layer is at least 100 microns. 1.2.4. The aluminum drainage tray on the roof of greenhouses – the vertical cross-section must not be less than 155 mm. 1.2.5. Hardware for assembling aluminum structures made of stainless steel, components for glazing — rubber seals, gaskets, glazing beads, fasteners. 1.2.6. Provide removable two-arm supports for suspending lower heating pipes to the columns of the vegetable greenhouse frame. 1.2.7. Provide sanitary checkpoints for personnel and equipment for each department, as well as at the entrance to the gallery. 2. Technological systems: 2.1. Window ventilation system Separate opening mechanisms for right- and left-hand vents in greenhouses, the seedling department, the irrigation department and in connecting corridors. Use motor-reducer units from Ridder or an equivalent with positioner blocks in the systems. The vent system must operate in accordance with the climatic zones of the departments. Provide for mechanical (manual) closure of the vents in emergency situations. 2.2. Heating system with hangers and fasteners: To provide in vegetable greenhouses systems for top, side, bottom, under-slope (pipes Ø51×2.5), and zonal heating (one pipe Ø33.7×2.5) with separate control from control units installed at the ends of the greenhouses. At the same time, implement top, zonal, bottom, and side heating with separate control for each climatic zone; implement under-slope heating as a common system for each greenhouse, divided along the path into two systems. The heating control units should be placed at the ends of the	
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	greenhouses, along the rows of plants. To provide in the seedling department a tent, under-tray, end, and bottom heating (place the bottom heating under the hydroponic filling tables in the supporting structure of the tables). To provide for upper, sub-slope, and side heating in the irrigation department (pipes Ø51×2.5 mm) from a control unit installed directly in the department. Provide for side, upper, and sub-slope heating systems in the connecting corridors. The division into climatic zones should be carried out in the same way as for the zones for ventilation mechanism systems. The lower heating registers should be provided with a width of 600 mm along the axes, for pipes with a diameter of 51 mm. At the ends of the lower heating pipes, stop ends should be provided to prevent the technological equipment from sliding off. The supports under the lower heating registers must be secured using latches (not clamps). The distance between the supports and their number should be calculated to exclude the deflection of the pipe rail caused by technological equipment (pipe-rail trolleys for plant care, pipe-rail trolleys for servicing equipment located under the greenhouse roof, including a worker and a load weights, spraying robots, and other technological equipment). To provide upper heating pipes on hooks, suspended from the upper chord of the trusses. The connection of the upper heating pipes to the distribution pipes must be rigid; the connection of the under-slab heating pipes to the distribution pipes must be made using rubber sleeves. To place the rubber hoses for zone heating in the area around the paths – under the underfloor heating registers. Heating pipes connected to distribution pipes via rubber hoses must be equipped with shut-off valves. 2.3. The greenhouse block air recirculation system: To provide an air recirculation in vegetable greenhouses, in the seedling department - for each climatic zone, and in the irrigation department - using axial recirculation fans (white color) with speed flow control units. The fan's air volume is at least 5,000 m³/hour. The rotation speed is controlled in steps, in automatic and manual modes. The number and arrangement of fans must create a steady climate in terms of temperature and humidity across the entire perimeter of the greenhouse. 2.4. Системы зашторивания 2.4. Shading systems A horizontal double rack system for shading vegetable sections, seedling sections, and the irrigation section, along the upper and lower chord of the farms, using motor-reducers from Ridder company or an equivalent. The type of the lower screen is climatic: Material is polyester, transparent, fire-resistant. Shading level in diffused light is 25–26%. Shading level in direct light is 15–17%. Energy saving is at least 46%. Weight of the curtain is no more than 60 g/m². The type of the upper screen is energy-saving shading. The material is fire-resistant. Energy saving is 65–70 %. Shading is 70–80 %. Fabric weight is no more than 100 g/m². The vertical roller blind system with fabric is installed around the perimeter of the greenhouse block and between the vegetable sections, using	
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	drum winding and motor-reducers from Ridder or an equivalent. The curtain opening/closing control is separate for each department. The screen type is a climate-control shading, energy-saving. Material is polyolefin, white, fire-resistant. Shading level under diffused and direct light is 90–100 %. Energy saving is 70–75 %. Weight is no more than 260 g/m². Thickness is no more than 0.5 mm. 2.5. Evaporative cooling and air humidification system Evaporative cooling and air humidification system must be made of stainless steel and includes: - a reverse osmosis system; - the containers for storing prepared, purified water; - the number of nozzles is at least 1,000 per hectare, and the nozzle capacity is at least 5–7 liters per hour; - the high-pressure pipelines with stainless steel fittings; - stations with supply pumps (1 station per 0.5 ha) - nozzles, adapter connectors, fittings, connectors, a set of fittings for evaporative cooling and air humidification system made of stainless steel; high-pressure hoses, pressure gauges, consumable materials; Evaporative cooling and air humidification system must be integrated into automatic operation based on the readings from the greenhouse temperature and humidity sensors, using the VPD (vapor pressure deficit) indicator. 2.6. The plant irrigation system and chemical mixing station for the seedling department blocks and vegetable greenhouses The chemical mixing stations, water storage tanks and drainage collection tanks, filtration and disinfection units, and fertilizer tanks must be located in the irrigation department. Plant density in vegetable departments is 3 plants per m². Each department №2–9 must have its own chemical mixing station. To provide for one pre-mixing unit for fertilizers for two chemical mixing stations, with a system for transferring the solutions to the master solution tanks for departments No. 4–9. To provide two chemical mixing stations for Section №1. To provide one chemical mixing station for two seedling departments №10–11. To provide 1 unit for preliminary mixing of fertilizers with a system for pumping into tanks of master solutions for departments №1–3 and №10–11. To provide separate, interconnected chemical mixing stations for each department, with the possibility of emergency replacement. To provide 4 tanks for the fertilizer stock solution (with a minimum two-day supply during periods of intensive plant watering) for each irrigation system and one tank for acid. To provide a tap per 0.25 ha, located near the central path for sections № 1–9. To provide a simultaneously operating valve for sections №1–3. The number of simultaneously operating valves for sections №4–11 shall be at least two. To provide facilities for preliminary acidification of water from pH 8 to pH 6. Each irrigation system must be equipped with dosing devices (controllers) for applying hydrogen peroxide and pesticides. - The EC. PH. T. dual control system.	
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		- The irrigation system must be linked to the internal light sensors (Photosynthetically active radiation) located in the vegetable and seedling sections. - to provide tanks for a daily water supply; - materials for the wiring and distribution of the nutrient solution; - A white drip net for irrigation with compensated NETA FIM 3l/h drip trays or an analog with a white hose (80 cm long) and an OCW side locking plug; - The connection of technological equipment using polyvinyl chloride pipelines. 2.7. The system for collecting, disinfecting and reusing of drainage. It must include a system for collecting, cleaning, disinfecting and reusing of the drainage solution. The drainage percentage should be taken as 40% of the irrigation volume. Dual drainage disinfection system: ultraviolet disinfection that use low-pressure ultraviolet lamps with a radiation wavelength of 254 nm and automatic lamp flushing with special solutions, thermal disinfection. Each crop and seedling department should have its own separate system for collecting, cleaning, and disinfecting of the drainage. 2.8. The assimilation lighting system — supplementary lighting for light-culture in vegetable and seedling departments with hangers and mounts. To provide the activation and deactivation of 50% of the lights in vegetable greenhouses and seedling departments in manual and automatic mode (“on”, “off” of lamps in a staggered arrangement). The lighting system must be linked to the internal light intensity sensors (Photosynthetically active radiation) located in the vegetable and seedling departments. 2.8.1. Vegetable departments: Average power: 230 W/m² Characteristics of the light points: a luminaire with an electronic ballast, two-socket, complete with a sodium lamp and dimming capability; power: 1000 W; supply voltage: 400 V. Position the light fixtures to ensure uniform light distribution at a height of at least 2 meters above the plants across the entire area of the greenhouses, taking into account the rules for the deep distribution of PAR across different plant tiers. To ensure the minimum possible light intensity penetration for 100% supplementary lighting – 200 µmol, and for 50% – 100 µmol at heights of 1.8 and 2 m from floor level. To provide a software that enables monitoring of the lighting system’s condition, adjustment during the degradation and failure of light sources, and notification of the engineering service in case of any issues with the lighting system. The software should support manual configuration and automatic adjustment of lighting scenarios depending on the daily solar radiation input, weather conditions, and the temperature balance inside the greenhouses, as well as on the rise or fall in CO₂ content in the greenhouses. It should also allow the creation of a separate zonal supplementary lighting mode for edge zones.	
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		The dimming control software should be universal, suitable both for sodium lamps and for the possibility of later switching to LED lamps and hybrid supplementary lighting (sodium + LED), both individually and in a combined mode. To attach the light fixtures to the greenhouse structures using a light-weight galvanized channel with a cross-section of 50×50×1.5–2.0 mm. 2.8.2. Seedling departments To provide a LED supplementary lighting system in the seedling departments for growing seedlings of cucumbers, tomatoes, peppers, and salads, with an average light intensity across the entire area of at least 240 $\mu\text{mol}/\text{m}^2/\text{s}$, at a height of 0.5 meters above the table level. Built-in 60-100% wireless power control module. 2.8.3. Control cabinets for additional lighting The protection class must be no lower than IP-65. The cabinets must be equipped with contactors, starters, timers, relays, circuit breakers, residual-current devices, and other components to enable the operation of artificial supplementary lighting in automatic mode via the climate control system, with the ability to control the dimming of the lights using a software. 2.9. The greenhouse block plant spraying system: To install the distribution piping in vegetable greenhouses and the seedling section, connecting to a stationary unit (equipped with variable-frequency drive pumps): - a solution preparation tank with a level sensor at a volume of at least 1 m³ — 2 pieces; - mixing pump; - mechanical cleaning filters (100 μm); - solution supply pumping station; - a set of distribution taps; - a set of supply pipes, shut-off taps, and connecting elements (tees, elbows, etc.). 2.10. Carbon dioxide fertilization system for a greenhouse complex To provide the installation of concentration sensors in each climatic zone, 2 pieces each, starting from the designed boiler house with overhead distribution of mains inside the greenhouse. To provide gas analyzers to prevent poisoning of personnel and plants, to monitor exhaust gases and to maintain a safe microclimate in greenhouses. To ensure that the CO₂ systems of each greenhouse are connected to a common manifold located in the boiler room. The CO₂ concentration in the greenhouses is 1000–1200 ppm. 2.11. Checkweighing system An automated measurement system should be provided for monitoring the parameters of the root zone, irrigation volumes, and drainage water for each tap in blocks № 1–9 for round-the-clock continuous monitoring of the water-physical and chemical properties of a mineral wool substrate with a density of 75–85 kg/m³ under intensive light culture conditions, to automatically control drip irrigation cycles. The functional composition and technical characteristics of the modules: 1. Weight measuring tray (strain gauge station)	
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		Design: an insulated suspended or floor-mounted tray made of stainless steel or chemical-resistant plastic, with a length of at least 2000 mm (to fit the dimensions of two standard mats). Weight sensors: high-precision moisture-proof strain gauges (protection class at least IP67/IP68). Functionality: continuous weighing of the mat with plants in real time. Measurement accuracy is ± 5 grams. The calculation of transpiration dynamics (plant moisture loss), determination of the exact percentage of nighttime substrate shrinkage and the moment when the mat becomes saturated after watering. 2. Drainage volume and rate measurement module (drainage counter) A type of a meter: an electronic-mechanical tipping type sensor (measuring spoon) or a siphon contactless counter. Accuracy: the measurement discreteness is no more than 15-20 ml per pulse. Functionality: Automatic calculation of the total volume of drainage solution flowing out of the control mat. Determination of the drainage start time (relative to the start of the irrigation pulse) and calculation of the current drainage percentage in real time. 3. Needle multi-sensor for substrate parameters (WCM / sensor in the mat) Sensor type: multielectrode immersion probe made of stainless steel (installed directly into the body of the mineral wool mat). Controlled parameters: Volumetric Water Content (VWC): measurement of the volume of volumetric water content in the range from 0 to 100% with an accuracy of $\pm 3\%$. Electrical conductivity (EC in the mat): measurement of the salinity level in the root zone in the range from 0 to 10 mS/cm with an accuracy of ± 0.1 mS/cm. Substrate temperature: cotton wool temperature control in the range from 0 to $+50$ °C with an accuracy of ± 0.5 °C. 4. Data acquisition controller and integration interface Cabinet protection class: At least IP65 for operation in conditions of high humidity and treatment of the greenhouse with disinfectant solutions. Data transmission: supports industrial communication protocols (Modbus, CAN-bus, RS-485 or secured radio channel) for direct integration with microclimatic irrigation control computers (Priva, HortiMaX, LIMS, etc.). The software should provide graphical display of tracks (mat weight, EC, pH, drainage volumes) with data archiving steps of no more than 1-5 minutes. 5. General operational requirements: Power supply: safe low voltage (12V/24V). Resistance of sensor elements to constant exposure to concentrated nutrient solutions of agrochemicals (macro- and microelements). 2.12. Insect control system The number of systems depends on the range of the trap.	
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	Electric traps for the destruction of insects with a protective grid, in particular, scoops, moths and butterflies, for vegetable and seedling departments №1-11, which must be switched on simultaneously in each department via software, according to a preset time mode. 2.13. Hardware and software complex. Automated system for controlling and maintaining the microclimate in the greenhouse An automatic microclimate management system manufactured by Priva, Ridder, LIS, or an analog for managing a greenhouse complex S=17.6 ha, taking into account the distribution into climatic zones for growing three types of crops and a seedling department according to the Annex "Explanations of the greenhouse complex". The delivery set includes: A personal computer and software, with the necessary department sensors, a weather station, a control panel, a low-voltage regulated current and voltage panel, a motor control panel and mounting frames, with control and communication cables. The software must perform microclimate control functions involving all the listed systems—as well as any others necessary—to ensure the complex operates as a unified technical entity. It is necessary to display all the required operating parameters in real time and to archive them for long-term storage in network and cloud storage systems. • Heating system • Vent window system • Evaporative cooling and air humidification system • Forced air recirculation system • Shading systems • Systems for nutrient solution preparation and control of plant irrigation and drainage • Checkweighing system • Thermal disinfection and decontamination systems • CO2 supply and concentration systems • Assimilation lighting systems in specified modes • Automatic control systems for boiler units • System for monitoring the filling and emptying of heat storage tanks • Weather station: equipped with sensors for temperature, humidity, air speed and direction, precipitation, solar radiation and illuminance, and atmospheric pressure. The software is pre-installed on the control computer, with two hard drives for duplicating information (mirroring), providing a backup copy on a separate medium with an unlimited number of installations. 3. Boiler room equipment 3.1. Boiler with condenser Amount – 2 pieces. Three-way hot water boiler with low Nox emissions and a large volume of boiler water with a condenser with the following characteristics: <table> <tr> <th>Parameter name</th><th>Measure unit</th><th>Indicators</th></tr> <tr> <td>Boiler power</td><td>kW</td><td>14000-1400</td></tr> <tr> <td>Condenser power</td><td>kW</td><td>1400</td></tr> <tr> <td>Estimated pressure</td><td>bar</td><td>3</td></tr> </table>	Parameter name	Measure unit	Indicators	Boiler power	kW	14000-1400	Condenser power	kW	1400	Estimated pressure	bar	3	
Parameter name	Measure unit	Indicators												
Boiler power	kW	14000-1400												
Condenser power	kW	1400												
Estimated pressure	bar	3												

		Estimated temperature	°C	105	
		Operating temperature	°C	95	
		Minimum inlet water temperature	°C	60	
		The volume of water in the boiler	litres	25800	
		Efficiency with condenser	%	95	
		Hydraulic losses in the boiler	kPa	10	
		Hydraulic losses in the condenser	kPa	8	
		Water flow rate			
		through the condenser	m ³ /h	125	
		Combustion product temperature	°C	110	
		Condenser heating surface	m ²	934	
		Safety valves	psc	2	
		- boiler bypass pump	psc	2	
		- boiler damper pump	psc	2	
		- condenser circulating pump	psc	2	
		- circulation pump			
		with integrated			
		frequency converter	psc	2	
		- mains pump for boiler room	psc	2	
		3.2. Boiler without a condenser			
		Amount – 2 pieces.			
		Low-NO _x , high-water-volume, three-pass greenhouse hot water boiler with the following specifications:			
		Parameter name	Measure unit	Indicators	
		Power	kW	14000	
		Estimated pressure	bar	3	
		Estimated temperature	°C	105	
		Operating temperature	°C	95	
		Minimum inlet water temperature	°C	65	
		The volume of water in the boiler	litres	25800	
		Efficiency	%	92	
		Hydraulic losses in the boiler	kPa	10	
		Combustion product temperature	°C	180	
		Safety valves	psc	2	
		Auxiliary equipment:			
		boiler pumping equipment:			
		- circulation pump with integrated frequency converter;			
		- boiler bypass pump;			
		- mains pump for boiler room;			
		- boiler damper pump.			
		3.3. The burner			
		Amount – 4 pieces.			
		A burner compatible with a hot water boiler. An automatic block combined burner having a block design, fully automated, powered by fuels: gas, diesel.			
		- the firing heads are made of heat-resistant stainless steel;			
		- burners must have separate drives for gas and diesel, for high-quality combustion when switching from one fuel to another;			
		- the gas and air damper actuators are based on standardized stepper motors;			

	- a fuel station with pumps and a flow tank, the volume of which is determined by the burner manufacturer; - the control system is based on a microprocessor controller with a 7" touchscreen display; - welded aluminum housing; - centrifugal fan; - air damper; - flame control device; - ignition transformer; - control panel; - gas ramp with leak control unit; - gas damper; - fuel supply pump; - solenoid valves and injectors; - set of connecting cables with burner components. The burner control system shall perform the following protective shut-down of the burner in the following cases: - lack of electricity; - reduction of gas pressure upstream of the gas ramp; - air pressure drop downstream of the fan; - flame loss during operation; - ignition failure; - in case of leakage of gas valves. 3.4. Gas condenser Amount – 2 pieces. Gas condensers for flue gas heat recovery, heating water for greenhouse hot water supply systems, and extracting carbon dioxide (CO2) for plant fertilization. The exhaust gas condenser must be made of steel designed to operate in aggressive environments, with a built-in bypass in the housing, which also provides the collection and discharge of condensate compatible with installed hot water boilers. Connection type: Flanged. <table><tr><td>Thermal power of the installation:</td><td>1405 kW</td><td></td></tr><tr><td>Combustion product temperature</td><td>°C</td><td>150</td></tr><tr><td>The amount of carbon dioxide to provide 1000-1200 PPM/1Ga</td><td>kgs/h</td><td>150-200</td></tr><tr><td>Temperature of cooled flue gases</td><td>°C</td><td>40</td></tr><tr><td>Condensation temperature</td><td>°C</td><td>60</td></tr></table> 3.5. CO2 dosing station Amount -1 piece CO2 dosing station with a fan designed for installation behind the condenser and for distributing CO2 throughout the greenhouse includes: - stainless steel fan with an AC motor and direct drive to the impeller; - built-in stainless steel mixing valve for optimal mixing of flue gases and fresh air, with an automatic valve flap opening/closing servo, which regulates the quality of CO2 supplied to greenhouses based on commands from a horticultural computer when analyzing incoming CO2 to greenhouses;	Thermal power of the installation:	1405 kW		Combustion product temperature	°C	150	The amount of carbon dioxide to provide 1000-1200 PPM/1Ga	kgs/h	150-200	Temperature of cooled flue gases	°C	40	Condensation temperature	°C	60	
Thermal power of the installation:	1405 kW																
Combustion product temperature	°C	150															
The amount of carbon dioxide to provide 1000-1200 PPM/1Ga	kgs/h	150-200															
Temperature of cooled flue gases	°C	40															
Condensation temperature	°C	60															

- monitoring of boiler flue gases (CO, SO₂, CO₂, CH₄, NO, NO₂) during gas supply from the condenser to the greenhouses, with a shut-off function triggered if preset parameters are exceeded;
- CO₂ flow monitoring pressure sensor and relay;
- protective monitoring system for the temperature of CO₂ supplied to greenhouses, featuring a function to cut off the CO₂ supply if the gas temperature exceeds the set limit;
- flexible hose for connecting the inlet and outlet sides of the fan;
- control panel for CO₂ dosing station with motor frequency converter, IP54 protection rating, set of connecting cables and components.

3.6. Chemical water treatment plant

Amount – 1 piece.

Chemical water treatment plant that provides water softening.

- maintaining water purity. Removal of salts, organic substances, and microorganisms.
- dissolved oxygen level monitoring.
- water pH adjustment: 8,5–10,5.
- monitoring of the ionic composition of water.
- deaeration. Removal of dissolved oxygen from water to reduce the risk of corrosion.

Storage tanks, expansion system – 1 set;

3.7. Boiler room auxiliary equipment

Auxiliary equipment:

equipment for the greenhouse complex:

- network pumps for greenhouses with a built-in frequency converter;
- pumps for the seedling and irrigation departments;
- network pumps for the warehouse;
- network pumps for the administrative and household complex;
- a double-circuit plate heat exchanger for providing hot water supply to the administrative building of greenhouses and a drying room for work clothes;
- water treatment plant - 1 set;
- heat exchanger for preparing water for watering plants in greenhouses, main and backup;
- hardware and software complex for control of exhaust gases from the boiler (CO, SO₂, CO₂, CH₄, NO, NO₂.) when gas is supplied from the condenser to the greenhouses;
- multi-channel stationary device for continuous automatic measurement of the volume fraction of methane, the mass concentration of carbon monoxide, as well as pre-explosive concentrations of flammable gases in the air and the alarm system for exceeding the set thresholds for the operation of automation safety protection boiler;
- nitrogen metering station, to replace the oxygen and water vapor content in the air, prevent oxidative processes and extend the service life of equipment, an accumulator tank and an expansion station (accumulation of water after chemical water treatment);
- chimney with flues, with service platforms –4 sets;
- other necessary equipment for the operation of the boiler room with greenhouses in manual and automatic modes as a single technical unit.

		Equipment and materials 4.1. Glass 4.1.1 Thermally tempered diffuse patterned glass Glass for greenhouse roofing, internal partitions between sections, and the connecting corridor. Glass thickness is 4 mm; light transmission is at least 96%; light diffusion coefficient is 50%. 4.1.2. Single-chamber glass units For glazing greenhouses around the perimeter. The inner glass of the double-glazed unit is thermally tempered diffuse patterned glass 4 mm thick, light transmission capacity is at least 96%, light scattering coefficient is 50%. The outer glass of the double-glazed unit is thermally tempered with a thickness of 4 mm. 4.2. Reflective agrofabric. "EcoTex" agricultural fabric made of UV-stabilized fibrillated polypropylene yarn resistant to harsh environments, featuring longitudinal green stripes spaced 15 cm apart and heat-sealed edges. Primary raw materials: The density is not less than 130 g/m². Color: white. The sleeve width is 4.2 meters (vegetable departments №1-9). The length of the roll is a multiple of the length of the half-section (vegetable departments №1-9). Quantity: for vegetable and seedling departments. 4.3. Galvanized steel tray with polymer coating Galvanized steel trays with polymer salt-resistant coating on suspensions to the lower chord of farms. Trays of the Meteor type or an analog with a width of 200 mm are manufactured with attachments for laying plants on both sides – a pitch of 0.5 m, with products for fixing drip irrigation lashes and supports for zone heating pipes, a set for each tray for the drainage collection system (plugs, drain pipes), as well as support parts the end segments of the hanging trays. The number of rows in the section is 4. 4.4. Plant suspension system The trellis height from the lighting system is 2 m. The trellis is double-lined is 4mm galvanized. Tensioners (Gripple type) complete with tension hooks. The hooks for hanging plants are from galvanized wire. The number of hooks is 3.6 plants per m² for tomatoes and cucumbers and 7.5 plants per m² for peppers, + 25% spare. 4.5. Hydraulic self-propelled trolley for greenhouses Amount – 118 pieces. A tube-rail trolley with a hydraulic scissor lift platform and two gates, designed for plant care, harvesting and performing engineering services. Specifications: - dimensions of the platform's working area 440*2000 mm; - the work platform must be equipped with a 1000 mm high fence and self-closing gates; - the minimum lifting height of the platform above the pipe level is 3500	
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		mm; - net weight not more than 450 kg; - load capacity of at least 250 kg; - the speed of movement on rails is 5-65 m/min; - hydraulic drive of the shunting chassis; - the axial distance of the rail pipes is 600 mm; - the diameter of the rail pipe is 51 mm. The trolley must be equipped with a control panel, which contains: an emergency STOP button, a forward-backward direction switch, a speed control switch, a chassis extension button, a platform lifting and lowering switch, a battery level indicator with an audible discharge signal and a trolley operation status indicator with a QR error code. Important electronic components must be located in a box with a protection class of at least IP67. Microprocessor built-in charger with voltage -220V/50 Hz and protection not lower than IP67, lithium battery - 24 V, not less than 100 Ah. The trolley must be equipped with an angle sensor. Regenerative braking by the engine when the speed decreases or stops. The trolley must be equipped with a removable drawer for tools and readily available materials. 4.6. Hydraulic self-propelled greenhouse trolley Amount – 2 pieces. Pipe-rail trolley with a hydraulic scissor lift platform, designed for engineering and maintenance work on supplemental lighting, ventilation, shading, and other systems. Specifications: - dimensions of the platform's working area 440*2000 mm; - the work platform must be equipped with a 1000 mm high fence and self-closing gate; - minimum platform lifting height above the pipe level is 5,000 mm; - net weight not more than 550 kg; - load capacity of at least 250 kg; - the speed of movement on rails is 5-65 m/min; - hydraulic drive of the shunting chassis; - the axial distance of the rail pipes is 600 mm; - the diameter of the rail pipe is 51 mm. The trolley must be equipped with a control panel, which contains: an emergency STOP button, a forward-backward direction switch, a speed control switch, a chassis extension button, a platform lifting and lowering switch, a battery level indicator with an audible discharge signal and a trolley operation status indicator with a QR error code. Important electronic components must be located in a box with a protection class of at least IP67. Microprocessor built-in charger with voltage -220V/50 Hz and protection not lower than IP67, lithium battery - 24 V, not less than 50 Ah. The trolley must be equipped with a tilt sensor and outriggers. Regenerative braking by the engine when the speed decreases or stops. The trolley must be equipped with a removable drawer for tools and readily available materials. 4.7. Four-point platform trolley Amount – 10 pieces. Designed for transporting loads weighing at least 400 kg over short distances. Technical specifications:	
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- net weight not more than 50 kg;
- platform dimensions 1250 × 750 mm, with a platform fence height of 40 mm;
- on 4 polyurethane foam wheels;
- the trolley handle, featuring a swivel assembly with bearings, must be equipped with a self-return spring.

4.8. Twine winding machine

Amount -2 pieces.

Twine winding machine 800-1000 tex for hooks and coils with spindles for winding ordinary hooks and hooks with a free drop in sizes 180 and 220 mm. Specifications:

- the number of spindles is no less than 8;
- the spindle speed is 100-1000 revolutions per minute;
- the possibility of installing a spindle for winding coils of various modifications;
- personnel protection system against rotating parts, conforming to the ISO 13849-1 safety class;
- touch panel to display the necessary information: hook size, winding length, winding speed, number of twine wound and number of hooks wound;
- 220 V, 50 Hz mains power supply;
- easily accessible emergency stop buttons; control buttons with illuminated operating mode indicators;
- integrated wheels for easy transport, with a built-in locking support.

4.9. Three-wheel electric forklift

Amount – 8 pieces.

Load capacity is 1500-1600 kg, length to the back of the forks no more than 1900 mm, total width is no more than 1100 mm, height along the overhead grille is no more than 2100 mm, type of mast: two-section with free lifting, the height of the folded mast is not more than 2050 mm, the lifting height is 2800-3200 mm, the fork length is from 920 to 960 mm, with a fork extension is 2000 mm. The wheel formula is front/rear (x=driving) 2X/2, the tire type is superelastic. The turning radius is not more than 1600 mm, the driving speed is not less than 15 km/ h, the ground clearance is not less than 90 mm. The engine type is electric with a built-in lithium battery of at least 300 Ah, complete with a charger with a capacity of at least 200 Ah. The control unit (controller) is ZAPI. Illumination type: LED. Adjustable steering column, power steering, reverse buzzer, flashing light, protective cargo grille and overhead grille, panoramic rearview mirror, side mirrors. Digital multifunction display with indication of battery charge and voltage and a car clock counter, fault codes, waterproof and vibration-resistant, with a wheel angle indicator.

4.10. Electric fork lift truck

Amount – 2 pieces.

The load capacity is 1500-1600 kg, the length to the fork back is no more than 1900 mm, the total width is no more than 1100 mm, the height of the head grille is no more than 2100 mm, type of mast: three-section with free lifting, equipped with a 360-degree rotator, the height of the folded mast is no more than 2100 mm, the lifting height is 4500-5000 mm, the fork length is from 920 to 960 mm. The wheel formula is

	front/rear (x= driving) 2X/2, the tire type is superelastic. The turning radius is no more than 1600 mm, the driving speed is no less than 15 km/h, the ground clearance is no less than 90 mm. The engine type is electric with a built-in lithium battery of at least 300 Ah, complete with a charger with a capacity of at least 200 Ah. The control unit (controller) is ZAPI. Illumination type: LED. Adjustable steering column, power steering, reverse buzzer, flashing light, protective cargo grille and overhead grille, panoramic rearview mirror, side mirrors. Digital multifunction display with indication of battery charge and voltage and a car clock counter, fault codes, waterproof and vibration-resistant, with a wheel angle indicator. 4.11. Knapsack sprayer Amount – 15 pieces. Rechargeable satchel sprayer with a liquid tank capacity of 12-16 liters. Removable lithium battery of at least 4 Ah with charger. Built-in system for constant mixing of the solution in the tank, a set of replaceable nozzles, a repair kit. 4.12. Manual hydraulic trolley with scales Amount – 4 pieces. A pallet trolley with a load capacity is at least 2000 kg, a fork length is 1150 mm, a lowered fork height is no more than 80 mm, and a fork stroke height is at least 120 mm. Equipped with an electronic scale with an LCD display. Functions: zero calibration, gross weight, net weight, total weight. Automatic shutdown after 3 minutes of downtime. It is powered by a built-in accumulator battery of at least - 5 Ah. 4.13. Automatic Machine for Forming and Gluing corrugated Cardboard Boxes Amount - 2 pieces. Automatic shaper of open boxes (corrugated sheets) with an adhesive station, hot glue bonding. Tare type: open vegetable tray type FEFCO 0452 / 0406 with stacking for 9 kg of products (tomatoes, cucumbers, peppers). Material: five-layer corrugated cardboard (grades P-32 / P-33, BC double wall or EB double wall). Hard corners. Approximate tray size: 400x300x170 mm. The capacity is no less than 30 pcs. per minute. 4.14. Water Spectrometer Amount -1 piece. A laboratory desktop device of the visible spectrum (320-1100 nm) for fast and accurate analysis of water using test cuvettes for the content and concentration of chemicals used to feed tomatoes, cucumbers and other vegetable crops. Built-in barcode scanner is for automatic recognition of cuvette tests, touch-screen color LCD display with backlight. Memory is for at least 2000 measurement results, the ability to connect to a PC, printer, local network. Completeness includes the necessary laboratory equipment for sampling and conducting sample research. There are 2 sets of necessary test cuvettes for the examination of samples for macro- and microelements for on the culture of tomatoes, cucumbers and peppers.	
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	4.15. Spectrometer for measuring light parameters Amount – 1 piece. Portable professional handheld instrument is for comprehensive and detailed light analysis measuring CCN, FC, LUX, CRI, PPFD, ripple and other parameters in the wavelength range 380-780nm using a CMOS sensor, with a color LCD display and the ability to connect to a PC, specifications: - for measuring spectral composition, color temperature, color rendering index and plotting spectral distribution for sodium and LED illumination; - wavelength range 380-780nm; - wavelength measurement step: 1 nm; - illuminance range from 5 to 150,000 lux. 4.16. The shredder of plant residues (Bio chopper) Amount - 1 piece. The shredder of stems and vegetable remains of cucumbers, tomatoes, peppers with propylene twine 1000 Tex, self-propelled, on rubber tracks. Specifications: - productivity is at least 3000 m2 per hour with a track length of 50 m in greenhouses; - built-in metal detector; - engine type – diesel; - remote control panel for bio chopper operation; - the chopper must be equipped with an automatic knife sharpening device; - the width of the transport web is no less than 1000 mm (the center distance of the registers is 600 mm); - the number of canvases in the set is 40 pieces, 55 m long (track length 49.0 m); - 2 containers for the removal of crushed mass by electric loader, with a lifting capacity is 1,500 kg; - a set of additional knives and sharpening stones. 4.17. Seed Germination Chamber Amount -1 piece. For germination of tomato and pepper seeds with automatic and uniform maintenance of the microclimate inside the chamber. Germination will be carried out in cassettes, the number of seedlings in a cassette is 240 pcs., the size of the cassette is 400* 600 mm, and there are 20 cassettes on the shelves. The number of simultaneously germinated seeds in the chamber is 70,000. The approximate volume of the chamber is 25 m3. 4.18. Hydraulic Baler Press Amount -1 piece. Hydraulic baler press for mineral substrate is horizontal semi-automatic with automatic strapping with polypropylene thread, a feeder hopper, mechanized feeding into a receiving feeder hopper, with a capacity of at least 700 mats/hour. The size of the mineral substrate 1000*200*100 mm. 4.19. Portable combometers Amount -6 pieces. For measuring acidity, electrical conductivity, and temperature in a water solution. Specifications:	
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	- the pH range is from 0 to 14, the resolution is not lower than 0.01 pH, the error is not more than 0.1 pH; - EC range is from 0 to 20 mSm/cm, conductivity resolution is 0.01 mSm/cm, no more than 2% of full scale; - temperature resolution from 0 to 50 °C, resolution 0.1 °C, accuracy 0.50 °C. The case is waterproof with protection is no lower than IP 67. Calibration is automatic at two points of standard buffers. A set of drainage sampling kits for each combometer. 4.20. Portable device for measuring EC and temperature Amount - 4 pieces. A GRODAN type device or an analog with database archiving with a needle sensor for measuring electrical conductivity and temperature in a substrate (mineral wool). 4.21. Equipment for logistics, harvesting, delivery and weighing of crops on an induction line 4.21.1 Automatic induction tractors Amount -6 pieces. With a platform for the operator The battery life is at least 8 hours. Tractors powered by lithium batteries, complete with charging stations. 4.21.2 Trolleys for harvesting Amount - 400 pieces. Prefabricated hand trolleys for registers with an axial distance of 600 mm, adapted for transporting products in coupling with a tractor. 4.21.3 Automatic line for receiving, weighing and unloading (stacking) products on pallets Weighing system with automatic generation of reports and accounting of products both separately for each vegetable grower and throughout the warehouse. 4.21.4 Automatic depoletizer Amount - 2 pieces. Depoletizer with automatic installation of protective corners is for fixing products on pallets, followed by strapping with stretch film or stretch mesh. The production volume is 200 tons per shift. 4.22. Clips for tomatoes, cucumbers, peppers The number is 4,500 thousand pieces for cucumber culture, the inner diameter is 15 mm. 9,000 thousand pieces are for pepper and tomato culture, the inner diameter is 25 mm. Clips for garter stems of tomatoes, cucumbers and peppers are UV-resistant and fertilizer-resistant, for repeated use over several seasons. Specifications: - polypropylene, primary raw material, color - transparent, white; - UV-resistant and smooth edges. 4.23. Petrol blower Amount - 10 pieces. Gasoline satchel blower is for professional work on large areas for	
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	cleaning wet and stale foliage. Specifications: - the engine is a two-stroke gasoline with speed control, an anti-vibration system and an air flow velocity is at least 85 m/s; - the weight is no more than 8 kg. 4.24. Installation of a hot fog generator Amount - 4 pieces. - Pulsfog installation or an analog of fine, non-cooled misting with a drop size is less than 15 mk, with a capacity is 2 ha/ h, with an effective range is at least 120 m - 2 pcs. - Pulsfog BiO installation or an analog of fine-grade cooled misting with a drop size is mk <15, with a capacity is 2 ha/h, - 2 pcs. 4.25. Container for collecting and transporting plant remains Amount - 200 pieces. Removable box made of galvanized steel and a transport trolley for registers with an axial distance of 600 mm and a pipe diameter of 51 mm. The container must be suitable for transportation and turning by a forklift with a rotator. Specifications: - the load capacity of a trolley with a container is no less than 500 kg; - volume is no less than 600 liters; - the possibility of connecting to a train with other products and transporting along a concrete path with a loader. 4.26. Robot Sprayer Amount - 6 pieces. A robot sprayer for applying fungicides and insecticides for automatic operation under registers with an axial distance of 600 mm and a pipe diameter of 51. Specifications: - the maximum speed is up to 100 m/s with an adjustable supply of solution depending on the speed of movement; - self-adjustable swivel wheels; - lithium batteries is at least 150 Ah with built-in high-speed charger; - productivity is no less than 0.5 hectares per hour; - tank capacity is 250- 300 liters; - height adjustable rod up to 0.8 m, with the ability to quickly fold into the transport position; - three-zone rod (left, right, end) with the possibility of disconnecting one of the zones; - each nozzle holder must be equipped with a valve for shutting off the supply of solution with a 360 degree rotation function around its axis; - the nozzle capacity is 0.34-0.68 l/min. 4.27. Greenhouse Roof Maintenance Trolley Amount - 1 piece. An external aluminum service trolley with a 4.0 m span, complete with transboarders. Drive type: electric, self-propelled. Waterproof low-voltage gear motors with a protection class is at least IP65 (for safe operation in case of direct exposure to atmospheric precipitation). Waterproof on-board control panel is on the platform. Functions included: switch the direction of movement (Forward/Backward), smooth speed control, LED indication of the remaining charge of the battery.	
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		The platform must be equipped with rigid aluminum safety railings with a height of at least 1000 mm of solid contour and a side strip at the bottom of the deck. The presence of certified points (anchor loops) on the body for reliable fastening of safety harnesses (belts) of workers. The presence of reliable mechanical stoppers (blockers), which exclude the spontaneous exit or fall of the service trolley from the transborder during movement along the end edge. 4.28. Gas analyzer Amount - 1 piece. A professional multifunctional gas analyzer for monitoring the carbon monoxide and carbon dioxide content, temperature and humidity in the ambient air, complete with the necessary Testo-315 type probes or equivalent. 4.29. High pressure washer Amount - 5 pieces. Professional electric mobile high-pressure washer for cleaning of process equipment and structures. Specifications: Washing class K7, single-phase, power is no less than 3 kW, capacity is no less than 600 l/h, maximum operating pressure is no less than 200 bar, high-pressure hose length is no less than 10 m with coil winding, complete with fan nozzle and mud cutter. 4.30. Cluster holders Amount – 3,000 thousand pieces. Type: caterpillar with diameter 6 mm, material is polypropylene, primary raw material, color white, UV-resistant and smooth edges, for repeated use. 4.31. Clip holders Amount – 40 thousand pieces. Spring-loaded holders are for galvanized steel roll adhesive traps for 150-300 mm wide tape to control whiteflies, thrips and other pests. 4.32. Vegetable packaging equipment Full-cycle packaging lines that require minimal operating staff: infeed, cleaning, precision weighing, filling, and labeling. Horizontal Flow-pack machines is for tray-based packaging. Types of products: tomatoes, cucumbers (50/50%). The amount of packaged products per 8-hour shift is 30,000 kg. Packaging is from 500 to 1000 grams. 4.33. Thermal imager for electrical equipment inspection Amount – 1 piece. The purpose is to monitor the thermal condition of electrical panels, contacts, switches. - matrix resolution is at least 320x240; - measuring temperature range is -20 to 550 °C; - thermal sensitivity is less than 0.05 °C (50 mK); - frame refresh rate is at least 25 Hz; - focus is automatic;	
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		- display mode: infrared image, visible light, frame blending function; - measuring markers: automatic detection of the hottest and coldest spots (Hot/Cold Spot); - protection class: enclosure with a protection rating of at least IP54; - power supply: removable lithium-ion battery; - interface language: full Russian localization of the device and PC software.	
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9. Additional requirements for the supply of goods.

The supplied Product must comply with the applicable legislation of the Republic of Belarus and existing rules and regulations.

The supplied Product subject to certification in the Republic of Belarus must possess Republic of Belarus certificates.

All software must be completely Russified, and also ensure the operation of the entire greenhouse complex according to the crop being grown.

In order to achieve optimal operating parameters of the equipment, to eliminate errors during installation and commissioning, and to reduce the time required for construction, installation, and commissioning, the Applicant must ensure delivery, supervision, and commissioning by specialists trained by the manufacturer of the supplied equipment. Applicant must ensure the presence of an authorized supplier representative at the construction site throughout the construction period—up to the facility's commissioning—to oversee the contractor's compliance with manufacturer requirements regarding contract terms and installation sequencing; to verify the greenhouse complex components delivered against the construction schedule, with the authority to make necessary decisions; and to handle the setup and operational preparation of the greenhouse complex as an integrated technological system, as well as the training of the client's personnel in maintaining the technological and energy-related processes of the supplied greenhouse complex.

A prerequisite is:

- assembly and operation instruction manuals in Russian;
- delivery of spare parts in volumes agreed by the parties together with the greenhouse complex, within the warranty period of operation;
- the warranty period for the supplied set;
- the estimated service life of the steel supporting frame of the greenhouse complex is at least 50 years. Other equipment – in accordance with the certificates of the manufacturers.

The purchase volume does not include:

- accumulation tanks (purchased by the customer, manufactured in the Republic of Belarus);
- lighting fixtures complete with lamps and lighting system software for vegetable and seedling departments (to be purchased by the customer).

10. Warranty obligations (other maintenance requirements, etc.)

- the warranty for the greenhouse structural frame and the curtain system with a canvas is at least 5 years from the greenhouse is put into operation;
- the warranty for the technological equipment of the greenhouse unit is at least 24 months from the moment the greenhouse is put into operation.

11. A list of documents and information that participants must provide to confirm their data (technological, qualification and other):

12. Contact person to clarify the technical and design parameters of the purchased goods (works, services): Deputy Director for Vegetable Growing of the Vesna-energo branch of RUE «Vitebskenergo» Yury Akhramenok.

Director of the Vesna-energo branch
of RUE «Vitebskenergo»

_____ E.S. Nabebin

Deputy Director for Vegetable Growing of the
Vesna-energo branch of RUE «Vitebskenergo»

_____ Y.S. Akhramenok

Head of the Agriculture Department
of RUE «Vitebskenergo»
