

ANNEX II + III: TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

Contract title: “Improving capacities for training, education and employment of convicted persons and investment in sustainability of humane living conditions in prisons”

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Lot 2: Solar Panels

Columns 1-2 should be completed by the Contracting Authority

Columns 3-4 should be completed by the tenderer

Column 5 is reserved for the evaluation committee

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient)
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
SOLAR PANELS				
1.	Solar flat plate collector – FPC <ul style="list-style-type: none"> Product must comply with Standards for Thermal Solar System: <ul style="list-style-type: none"> EN 12975-1, EN 12975-2, EN ISO 9806:2013, Solar-Keymark tested collectors High-performance absorber with complete meander pipe welded to the absorber metal (incl. elbows), CMT (cold metal transfer process) welded collector pan. Silicone-sealed glass pane with cover strip. Resistant to all atmospheric conditions, max. snow load pressure 300 kg/m². Highly-efficient PVD coating Insulation emission-free, non-flammable - A1 (EN13501), SPF tested Permissible operating pressure 10 bar 			
1.1.	Module - FPC - type A Qty.: 274 pcs			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> Gross area: 2.6 m² Module FPC capacity, at $\Delta T=0$ K: 1.933 W Heat loss coefficient W/(m² K): 3,869 Heat loss coefficient W/(m² K²): 0,016 Optical efficiency: 0,81 Solar fluid volume: 1,7 lit. Weight, max 44 kg 			
1.2.	Module FPC - type B Qty.: 127 pcs			
	<ul style="list-style-type: none"> Gross area: 3.3 m² Module FPC capacity, at $\Delta T=0$ K: 2.538 W Heat loss coefficient W/(m² K): 3,976 Heat loss coefficient W/(m² K²): 0,015 Optical efficiency: 0,81 Solar fluid volume: 1,9 lit. Weight, max 54 kg 			
1.3.	Large Module FPC - type C Qty.: 44 pcs			

	<ul style="list-style-type: none"> • Glass panels: 5 • Gross area: 12.9 m² • Module FPC capacity, at $\Delta T=0$ K: 9.665 W • Heat loss coefficient W/(m² K): 3,976 • Heat loss coefficient W/(m² K²): 0,015 • Thermal capacity kJ/(m² K): 6,461 • Optical efficiency: 0,81 • Solar fluid volume: 8,5 lit. • Weight, max 220 kg 			
2.	Aluminium frame for Module's FPC, with inclination. <ul style="list-style-type: none"> • Includes fixing elements of stainless steel, stainless steel screws, bonding sheets • Hydraulic connectors: Brass 			
2.1	Aluminium frame for 5 Module's FPC – type A, with inclination of 0°. Qty.: 26 pcs			
2.2.	Aluminium frame for 5 Module's FPC – type A, with inclination of 40°. Qty.: 18 pcs			
2.3.	Aluminium frame for 4 Module's FPC – type A, with inclination of 0°. Qty.: 3 pcs			
2.4.	Aluminium frame for 6 Module's FPC – type A, with inclination of 0°. Qty.: 1 pc			
2.5.	Aluminium frame for 7 Module's FPC – type A, with inclination of 0°. Qty.: 2 pcs			
2.6.	Aluminium frame for 8 Module's FPC – type A, with inclination of 0°. Qty.: 1 pc			

2.7.	Aluminium frame for 10 Module's FPC – type A, with inclination of 0°. Qty.: 17 pcs			
2.8.	Aluminium frame for 8 Module's FPC – type A, with inclination of 20°. Qty.: 1 pc			
2.9.	Aluminium frame for 4 Module's FPC – type A, with inclination of 40°. Qty.: 1 pc			
2.10.	Aluminium frame for 5 Module's FPC – type A, with inclination of 40°. Qty.: 1 pc			
2.11.	Aluminium frame for 10 Module's FPC – type A, with inclination of 40°. Qty.: 2 pcs			
2.12.	Aluminium frame for 7 Module's FPC – type A, with inclination of 60°. Qty.: 1 pc			
2.13.	Aluminium frame for 9 Module's FPC – type B, with inclination of 0°. Qty.: 1 pc			
2.14.	Aluminium frame for 8 Module's FPC – type B, with inclination of 0°. Qty.: 1 pc			
2.15.	Aluminium frame for 7 Module's FPC – type B, with inclination of 20°. Qty.: 4 pcs			
2.16.	Aluminium frame for 5 Module's FPC – type B, with inclination of 20°. Qty.: 1 pc			
2.17.	Aluminium frame for 5 Module's FPC – type B, with inclination of 40°. Qty.: 6 pcs			

2.18.	Aluminium frame for 9 Module's FPC – type B, with inclination of 40°. Qty.: 2 pcs			
2.19.	Aluminium frame for 10 Module's FPC – type B, with inclination of 40°. Qty.: 2 pcs			
3.	Roof mounting material for standard roof tile, – type 1. Qty.: 958 pcs			
	For the installation of FPC module parallel to the roof line, on tiled roofs with a roof pitch of at least 15°, and ≤ 30° roof pitch: <ul style="list-style-type: none"> • Material: Stainless steel 1.4301 • Maximum load-bearing capacity: <ul style="list-style-type: none"> ○ Loading pressure 75 kg /roof hook ○ Loading tension 25 kg /roof hook 			
4.	Roof mounting material for duo hanger bolt (DHB) Qty.: 64 pcs			
	For the installation of FPC module mounting for parallel and freestanding installation on various roof types and for freestanding installation on sufficiently anchored frames, on tiled roofs with ≤ 30° roof pitch: <ul style="list-style-type: none"> • Material: Stainless steel 1.4301 • Hanger bolt seal EPDM • Maximum load-bearing capacity: <ul style="list-style-type: none"> ○ Loading pressure 200 kg /DHB ○ Loading tension 150 kg /DHB 			
5.	Roof mounting material for standard roof tile, – type 2. Qty.: 66 pcs			

	<p>For the installation of FPC module parallel on plain tiled roofs, the hooked ends are hung over the roof battens and screwed in place, on tiled roofs with > 30° roof pitch:</p> <ul style="list-style-type: none"> • Material: Stainless steel 1.4301 • Plain tile foam, upper side, anthracite foam • Plain tile foam, underside, Rubber • Maximum load-bearing capacity: <ul style="list-style-type: none"> ○ Loading pressure 100 kg /roof hook ○ Loading tension 25 kg /roof hook 			
6.	<p>Roof mounting material for cement asbestos roof tile Qty.: 32 pcs</p>			
	<p>For the installation of FPC module parallel and freestanding on corrugated cement asbestos roofs. The calotte is screwed to the load-bearing wooden frame using the mounting screws and then sealed with sealant.</p> <ul style="list-style-type: none"> • Calotte, Hot-dip galvanised steel. • Angle bracket for calotte, Hot-dip galvanised steel. • Maximum load-bearing capacity, on tiled roofs with > 30° roof pitch: <ul style="list-style-type: none"> ○ Loading pressure 100 kg /console ○ Loading tension 50 kg /console 			
7.	<p>Lifting Large Module FPC – type C Qty.: 44 pcs</p>			
	Lifting Large Module FPC, (see Item 2.3), on the roof with crane and positioning on the mounted substructure.			
8.	<p>Hydronic basic set for FPC module's, copper piping Qty.: 76 sets</p>			

	<p>Hydraulic basic set with all connections to hook up the FPC module's array to copper piping:</p> <ul style="list-style-type: none"> • Material: Brass • Fitting with sensor pocket, completely mounted with adapter to CU 22 mm • Fitting with blind threaded connection, completely mounted with adapter to CU 22 mm • Fitting with dummy plug, for sealing the non-used connections • Base plate for fixing the connection fittings to the collector • Countersunk head screw, size M8, to fix the base plates to the covering thread groove • Teflon ring, for thermal separation of the connection from the collector frame 			
9.	<p>Hydronic basic set for FPC module's, corrugated pipe - type 1 Qty.: 12 sets</p>			

	<p>Hydraulic basic set with all connections to hook up the FPC module's array to corrugated pipe piping system:</p> <ul style="list-style-type: none"> • Material: Brass • Fitting with sensor pocket, completely mounted with adapter to corrugated pipe DN16 • Fitting with blind threaded connection, completely mounted with adapter to corrugated pipe DN16 • Fitting with dummy plug, for sealing the non-used connections • Base plate for fixing the connection fittings to the collector • Countersunk head screw, size M8, to fix the base plates to the covering thread groove • Teflon ring, for thermal separation of the connection from the collector frame 			
10.	<p>Hydronic basic set for FPC module's, corrugated pipe – type 2.</p> <p>Qty.: 8 sets</p>			

	<p>Hydraulic basic set with all connections to hook up the FPC module's array to corrugated pipe piping system:</p> <ul style="list-style-type: none"> • Material: Brass • Fitting with sensor pocket, completely mounted with adapter to corrugated pipe DN20 • Fitting with blind threaded connection, completely mounted with adapter to corrugated pipe DN20 • Fitting with dummy plug, for sealing the non-used connections • Base plate for fixing the connection fittings to the collector • Countersunk head screw, size M8, to fix the base plates to the covering thread groove • Teflon ring, for thermal separation of the connection from the collector frame 			
11.	<p>Hydraulic expansion set Qty.: 351 sets</p>			
	<p>The expansion set is using for the hydraulic connection between the collectors of an array.</p> <ul style="list-style-type: none"> • Material: Brass. • Hydraulic connector, each set contains 2 connectors 			
12.	<p>Solar air vents Qty.: 146 pcs</p>			
	<p>Solar air vents complete with mini ball valves R1/2" for installation on every collector array.</p>			
13.	<p>Line control valve, - type 1. Qty.: 52 pcs</p>			

	<p>High-temperature bypass circuit setter for regulation, display and shutting off the flow in collector arrays of different sizes.</p> <ul style="list-style-type: none"> • Housing: Brass • Thread connection, 3/4" female • Measuring range, 2-12 l/min, • Flow characteristic (KVS), 2.20 m³/h • Operating pressure 10 bar • Operating temperature 185°C 			
14.	<p>Line control valve, - type 2.</p> <p>Qty.: 2 pcs</p>			
	<p>High-temperature bypass circuit setter for regulation, display and shutting off the flow in collector arrays of different sizes.</p> <ul style="list-style-type: none"> • Housing: Brass • Thread connection, 3/4" female • Measuring range, 8-30 l/min, • Flow characteristic (KVS), 5.00 m³/h • Operating pressure max 16 bar • Operating temperature max 185 °C 			
15.	<p>Solar control unit for solar systems</p> <p>Qty.: 1 pc</p>			

	<p>Product must comply with Standards for Thermal Solar System: EN 12977-5</p> <p>Solar controller for small to mid-sized solar systems with heat metering, actuation of high-efficiency pumps, up to 10 pre-configured systems available for selection, automatic function checks as per VDI guideline 2169.</p> <ul style="list-style-type: none"> • Inputs: sensor input (Pt1000, Pt500, KTY) - 4 pcs. • Outputs: semiconductor relay 240V - 3 pcs. • Floating low voltage relay 30V - 1 pcs • Pulse-duration modulation outputs - 2 pcs • Protection class: IP 20 / DIN EN 60529 			
16.	<p>Solar control unit for mid-sized to complex solar systems.</p> <p>Qty.: 31 sets</p>			
	<p>Product must comply with Standards for Thermal Solar System: EN 12977-5</p> <p>Solar controller for mid-sized to complex solar systems with heat metering, actuation of high-efficiency pumps, up to 27 pre-configured systems available for selection, automatic function checks as per VDI guideline 2169.</p> <ul style="list-style-type: none"> • Inputs: sensor input (Pt1000, Pt500, KTY) - 4 pcs. • Outputs: semiconductor relay 240V - 4 pcs. • Floating low voltage relay 30V - 1 pcs • Pulse-duration modulation outputs - 2 pcs • Protection class: IP 20 / DIN EN 60529 			
17.	<p>Solar control unit for multi-tank and complex solar systems.</p> <p>Qty.: 3 sets</p>			

	<p>Product must comply with Standards for Thermal Solar System: EN 12977-5</p> <p>Solar controller for multi-tank and complex solar systems with heat metering, actuation of high-efficiency pumps, more than 28 pre-configured systems (e.g. time - controlled thermostat function or thermal disinfection), automatic function checks as per VDI guideline 2169.</p> <ul style="list-style-type: none"> • Inputs: sensor input (Pt1000, Pt500, KTY) - 8 pcs. • Outputs: semiconductor relay 240V - 4 pcs. • Outputs: semiconductor relay low voltage 24/240V - 1 pcs • Floating low voltage relay 30V - 1 pcs • Pulse-duration modulation outputs - 2 pcs • Protection class: IP 20 / DIN EN 60529 			
18.	<p>Protection for the outdoor sensor Qty.: 37 pcs</p>			
	<p>Surge protection for outdoor installation is using to protect the sensitive temperature sensors in or at the collector.</p> <ul style="list-style-type: none"> • Protection class; IP65 • Ambient temperature: from -25°C to +70 °C 			
19.	<p>Versatile temperature sensor, - type 1. Qty.: 37 pcs</p>			
	<p>Versatile temperature sensor for install in thimbles</p> <ul style="list-style-type: none"> • Temperature range: from -50°C to +180°C. • Supply voltage: 5 V. • Rated current: $I_c = 2 \text{ mA}$ • Resistance: $R_0 = 1000 \text{ Ohm}$ • Tolerance: At $0^\circ\text{C} \pm 0.3^\circ\text{C}$, at $100^\circ\text{C} \pm 0.8^\circ\text{C}$. 			

20.	Versatile temperature sensor, - type 2. Qty.: 78 pcs			
	Versatile temperature sensor for install in thimbles <ul style="list-style-type: none"> • Temperature range: from -5°C to +105°C. • Supply voltage: 5 V. • Rated current: $I_c = 2 \text{ mA}$ • Resistance: $R_0 = 1000 \text{ Ohm}$ • Tolerance: At $0^\circ\text{C} \pm 0.3^\circ\text{C}$, at $100^\circ\text{C} \pm 0.8^\circ\text{C}$. 			
21.	Sensor pockets for control thermostat Qty.: 115 pcs			
	<ul style="list-style-type: none"> • Material: Copper • Max. temperature of the thermostat head: $+85^\circ\text{C}$ • Connection is R 1/2" male thread. • Protection class; IP43 			
22.	Membrane-pressure expansion tanks for Solar system <ul style="list-style-type: none"> • Product must comply with Standards for Thermal Solar System: <ul style="list-style-type: none"> ◦ EN 13831 according to Pressure Equipment Directive (PED) 97/23/EC • Tanks is made of steel, coat on the outside and rough on the inside. • Temperature range: from -10°C to $+120^\circ\text{C}$ • Max. operating pressure: 10 bar, • Initial pressure in the exp. tank: 5 bar. 			
22.1.	Membrane-pressure expansion tank, - type 1. Qty.: 7 pcs			
	<ul style="list-style-type: none"> • Volume: 25 lit. • Connection size: $\varnothing 3/4''$ 			
22.2.	Membrane-pressure expansion tank, - type 2. Qty.: 4 pcs			
	<ul style="list-style-type: none"> • Volume: 33 lit. • Connection size: $\varnothing 3/4''$ 			

22.3.	Membrane-pressure expansion tank, - type 3. Qty.: 8 pcs			
	<ul style="list-style-type: none"> • Volume: 50 lit. • Connection size: Ø3/4" 			
22.4.	Membrane-pressure expansion tank, - type 4. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Volume: 80 lit. • Connection size: Ø1" 			
22.5.	Membrane-pressure expansion tank, - type 5. Qty.: 10 pcs			
	<ul style="list-style-type: none"> • Volume: 100 lit. • Connection size: Ø1" 			
22.6.	Membrane-pressure expansion tank, - type 6. Qty.: 3 pcs			
	<ul style="list-style-type: none"> • Volume: 140 lit. • Connection size: Ø1" 			
22.7.	Membrane-pressure expansion tank, - type 7. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Volume: 300 lit. • Connection size: Ø1" 			
22.8.	Membrane-pressure expansion tank, - type 8. Qty.: 3 pcs			
	<ul style="list-style-type: none"> • Volume: 500 lit. • Connection size: Ø1" 			

23.	Solar stations with flow meter Dual-line solar station is comprising of: <ul style="list-style-type: none"> • circulation solar pump, • line regulating valve with integrated flow meter, • 10 bar safety group with pressure gauge as well as pressure relief valve and connection for solar expansion tank, • multi-functional isolation valve for forward and return flow with thermometer and integrated metal gravity brakes, • filling and flushing connections with cylinder feed and drain cock, • isolatable venting pipe install in forward line, • wall and tank mount, • solar connections with compression fitting connection, • EPP heat insulation jacket with space for installation of solar control unit. 			
23.1.	Solar station with flow meter - type 1. Qty.: 26 sets			
	<ul style="list-style-type: none"> • High efficiency pump: P = 3 - 45 W. • Power Supply: U=230V, 50/60 Hz + PWM. • Speed: Infinitely adjustable via PWM signal. Power consumption: I=0,03-0,44 A. • Circulation pump: capacity-max 3,3 m³/h, delivery head: max 7.3 m • Thermometer, temperature range: from 0°C to +160°C • Flow meter 2-16 l/min • Solar safety group R1/2", p=0-10 bar 			
23.2.	Solar station with flow meter - type 2. Qty.: 5 sets			

	<ul style="list-style-type: none"> • High efficiency pump: P = 3 - 76 W. • Power Supply: U=230V, 50/60 Hz + PWM. • Speed: Infinitely adjustable via PWM signal. Power consumption: I=0,03-0,7 A. • Circulation pump: capacity-max 4,0 m³/h, delivery head: max 7,6 m • Thermometer, temperature range: from 0°C to +160°C • Flow meter 4-32 l/min • Solar safety group R1/2", p=0-10 bar 			
24.	Solar stations with sensor and control unit Qty.: 2 sets			

	<p>Dual-line solar station with duplex solar control units, is comprise of:</p> <ul style="list-style-type: none"> • measuring section with integrated flow and temperature sensor (for energy balancing of the circulation solar pump), • line regulating valve with integrate flow meter, • 10 bar safety group with pressure gauge as well as pressure relief valve and connection for solar expansion tank, • multi-functional isolation valve for forward and return flow with thermometer and integrate metal gravity brakes, • filling and flushing connections with cylinder feed and drain cock, • isolatable venting pipe installed in forward line (for wall or tank mounting), • solar connections with compression fitting connection, • EPP heat insulation jacket with space for installation of solar control unit. • High efficiency pump: P = 8 - 140 W. • Power Supply: U=230V, 50/60 Hz + PWM. • Speed: Infinitely adjustable via PWM2 signal. Power consumption: I=0,07-1,05 A. • Circulation pump: capacity-max 4,5 m³/h, delivery head: max 11,0 m • Thermometer, temperature range: from 0°C to +160°C • Flow sensor • Solar safety group R1/2", p=0-10 bar 			
25.	<p>Solar stations for large system Qty.: 4 sets</p>			

	<p>Single-line solar station, is comprise of:</p> <ul style="list-style-type: none"> • circulation solar pump • modular cascade pipe manifold, • safety group with pressure gauge, • solar pressure relief valve and connection for solar expansion tank, • multi-functional isolation valve with thermometer and integrate metal gravity brake, • KFE valve on the pump suction side, • filling and flushing connections with cylinder feed and drain cock, • connection points with solar flat seals, • 3-part EPP heat insulation jacket, • Wall bracket. • High efficiency pump: P = 16 - 310 W. • Power Supply: U=230V, 50/60 Hz + PWM. • Speed: Infinitely adjustable via PWM2 signal. • Power consumption: I=0,16-1,37 A. • Circulation pump: capacity-max 10 m³/h, delivery head: max 12,0 m • Thermometer, temperature range: from 0°C to +160°C • Solar safety group DN25, p=0-10 bar 			
26.	<p>Sensor module Qty.: 3 pcs</p>			
	<p>Sensor module for measuring flow, pressure and temperature, for system monitoring and heat quantity metering</p> <ul style="list-style-type: none"> • Connection dimension: R 2". • Sensor types: VPS 0-10 and VFS 10-200. • Measuring sections: 2 pcs 			

27.	Multifunctional valve Qty.: 3 pcs			
	<p>Multifunctional valve with integrate ball valve, gravity brake and thermo-control</p> <ul style="list-style-type: none"> • Connecting dimension: R 2". • Length: 90 mm. • Max. temperature: +150°C. • Thermometer, temperature range: from 0°C to +160°C. 			
28.	Secondary pump group for Hot Water Qty.: 18 sets			
	<p>Secondary pump group for hot-water is use to load the Tank in, e.g. plate heat exchanger systems, and is comprise of:</p> <ul style="list-style-type: none"> • metal gravity brake, • ball valve on the pump suction side, • flat seals for pump and connection • EPP heat insulation jacket. • Assembled ready-to-install • High efficiency pump: P = 3 - 45 W • Power Supply: U=230V, 50/60 Hz + PWM. • Speed: Infinitely adjustable PWM2 signal. • Power consumption: I=0,03-0,44 A • Circulation pump: capacity-max 3,3 m³/h, delivery head-max 7,3 m. • Thermometer, temperature range: from 0°C to +160°C • Multifunctional valve R1", 			
29.	Anti-stagnation unit with fan and 3-way motor switch valve Qty.: 3 pcs			

	<p>Cascade anti-stagnation unit for prevention from the stagnation of collector arrays and material fatigue.</p> <ul style="list-style-type: none"> • Connection: compression fitting DN28. • Cooler: <ul style="list-style-type: none"> ○ Pressure drop: - 21 mbar. ○ Material: Aluminium. • 3-way switching valve: <ul style="list-style-type: none"> ○ Power. supply: 230 V, 50 Hz, ○ Power consumption 7.5 VA ○ Max pressure/temperature 6 bar/110°C • Piping: Stainless steel, DN28 • Compression fitting: Brass, 28mm 			
30.	Anti-stagnation unit - type 1. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Connection: 2 x 2". • Power: 95 kW. • Pressure drop: 12,5 kPa. • Capacity flow propylene-glycol: 4400 lit/h. • Number of fans: 4. • Power of fans: 4x200 W. • Voltage: 230 Vac. 			
31.	Anti-stagnation unit - type 2. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Connection: 2 x R2". • Power: 129 kW. • Pressure drop: 12,5 kPa. • Capacity flow propylene-glycol: 4300 lit/h. • Number of fans: 4. • Power of fans: 4x200 W. • Voltage: 230 Vac. 			

32.	Solar hot water tank, enamelled Comply with the following Standards: <ul style="list-style-type: none"> • Designed per DIN EN 12897 and guideline AD-2000 • Welding standards EN 287-1 and EN ISO 3834-2 • Direct enamelling as per DIN 4753, Parts 3-6 • "Pressure Equipment Directive" 97/23/EC • Quality of water for human consumption" 98/83/EC 			
32.1.	Capacity 500 lit. Qty.: 8 pcs			
	<ul style="list-style-type: none"> • Max. pressure: 10 bar. • Max. temperature of drinking water: 95°C • Hot and cold water connection: 1" • Circulation connection: 3/4". • Lower register surface: 1,8 m². • Lower register volume: 12,8 lit. • Upper register surface: 1,1 m². • Upper register volume: 7,6 lit. 			
32.2.	Capacity 750 lit. Qty.: 8 pcs			
	<ul style="list-style-type: none"> • Max. pressure: 10 bar. • Max. temperature of drinking water: 95°C • Hot and cold water connection: 1" • Circulation connection: 3/4". • Lower register surface: 1,9 m². • Lower register volume: 13,3 lit. • Upper register surface: 1,2 m². • Upper register volume: 8,2 lit. 			

33.	Electrical heating element for enamelled boiler Heating elements made of high-corrosion-resistant chrome-nickel steel 2.4858 (AISI B424) suitable for up to 10 bar operating pressure and for use in containers with up to 100 mm insulation. Comply with the following Standards: <ul style="list-style-type: none"> • EN 12977-1, EN 12977-2, EN 12977-3 and EN 12977-4 			
33.1	Electric heating element 3.75 kw Qty.: 2 pcs			
	<ul style="list-style-type: none"> • Up to 10 bar pressure • Power: 3,75 kW. • Connection: R 6/4". • Control range: 5 - 75°C. • Voltage: 400 Vac. • Protection class: IP 44 			
33.2	Electric heating element 6 kw Qty.: 12 pcs			
	<ul style="list-style-type: none"> • Up to 10 bar pressure • Power: 6 kW. • Connection: R 6/4". • Control range: 5 - 75°C. • Voltage: 400 Vac. • Protection class: IP 44 			
33.3	Electric heating element 9 kw Qty.: 10 pcs			

	<ul style="list-style-type: none"> • Up to 10 bar pressure • Power: 9 kW. • Connection: R 6/4". • Control range: 5 - 75°C. • Voltage: 400 Vac. • Protection class: IP 44 			
34.	Combined tank for DHW (Domestic Hot Water) <ul style="list-style-type: none"> • Comply with the following Standards: <ul style="list-style-type: none"> ○ “Pressure Equipment Directive” 97/23/EG ○ “Quality of water intended for human consumption directive” 98/83/EG ○ Design according AD-2000 codes ○ Welding processes: EN 287-1 and EN ISO 3834-2. • Made of steel (S 235 JR) • Solar charging in 2-zone stratification • Corrugated stainless steel pipe for hygienic continuous heating process. • Standing ring. 			
34.1	DHW tank, capacity 1,5 m³ Qty.: 7 pcs.			

	<ul style="list-style-type: none"> • Max. operating temperature: +110°C. • Max. operating pressure DHW pipes: 6 bar • Max. operating pressure steel pipes: 3 bar • Water volume in DHW pipes: 55 lit. • Temperature diff. at 40l/min: $\Delta T=6K$ • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 7,5 m². • Smooth corrugated pipe length: 29 m. • Sanitary water connections: 1". • Dimension: Ø1000 x 2190 mm • Insulation - minimum: 100 mm. 			
35.	Multifunctional stratified tank for DHW (Domestic Hot Water) <ul style="list-style-type: none"> • Comply with the following Standards: <ul style="list-style-type: none"> ○ "Pressure Equipment Directive" 97/23/EG ○ "Quality of water intended for human consumption directive" 98/83/EG ○ Design according AD-2000 codes ○ Welding processes: EN 287-1 and EN ISO 3834-2. • Made of steel (S 235 JR) • Stratified solar charging via external spherical exchanger. • Corrugated stainless steel pipe using the hygienic continuous heating process. • Smooth corrugated pipe material: stainless steel (DN 40, 1.4404) 			
35.1	DHW tank, capacity 1,0 m³ Qty.: 4 pcs.			

	<ul style="list-style-type: none"> • Max. operating temperature: 110°C. • Max. tank operational pressure: 3 bar • Max. DHW pipe operating pressure: 6 bar • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 7,8 m². • Smooth corrugated pipe length: 29 m. • Sanitary water connections: 1". • Insulation - minimum: 100 mm. 			
35.2	DHW tank, capacity 2,0 m³ Qty.: 2 pcs.			
	<ul style="list-style-type: none"> • Max. operating temperature: 110°C. • Max. tank operational pressure: 3 bar • Max. stainless steel pipe operating pressure: 3 bar • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 2 x 8.8 m². • Smooth corrugated pipe length: 2 x 34 m. • Sanitary water connections: 2 x 1". • Insulation - minimum: 100 mm. 			
35.3	DHW tank, capacity 3,0 m³ Qty.: 4 pcs.			
	<ul style="list-style-type: none"> • Max. operating temperature: 110°C. • Max. tank operational pressure: 3 bar • Max. stainless steel pipe operating pressure: 3 bar • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 2 x 10 m². • Smooth corrugated pipe length: 2 x 39 m. • Sanitary water connections: 2 x 1". • Insulation - minimum: 100 mm. 			

35.4	DHW tank, capacity 4,0 m³ Qty.: 3 pcs.			
	<ul style="list-style-type: none"> • Max. operating temperature: +110°C. • Max. tank operational pressure: 3 bar • Max. stainless steel pipe operating pressure: 3 bar • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 2 x 10 m². • Smooth corrugated pipe length: 2 x 39 m. • Sanitary water connections: 2 x 1". • Insulation - minimum: 100 mm. 			
35.5	DHW tank, capacity 5,0 m³ Qty.: 1 pc.			
	<ul style="list-style-type: none"> • Max. Operating temperature: 110°C. • Max. tank operational pressure: 3 bar • Max. stainless steel pipe operating pressure: 3 bar • Corrugated pipe material: stainless steel (DN 40, 1.4404). • Smooth corrugated pipe surface: 2 x 10 m². • Smooth corrugated pipe length: 2 x 39 m. • Sanitary water connections: 2 x 1". • Insulation - minimum: 100 mm. 			
36.	Spherical exchanger for solar stratified tank The spherical exchanger for optimum charging of the stratified tank <ul style="list-style-type: none"> • Integrate copper finned tube heat exchanger • Material of spherical exchanger: Copper 			
36.1.	Spherical exchanger, capacity 68 lit Qty.: 5 pcs			

	<ul style="list-style-type: none"> • Max. pressure in exchanger: 10 bar. • Max. pressure in the housing: 3 bar. • Max. temperature in housing: 110°C • Exchanger surface: 9,5 m² 			
37.	Solar fresh water tank <ul style="list-style-type: none"> • Tank is made on-site with heat exchanger and electric heating element • Insulation wool in outer aluminium shell • Insulation thickness-minimum: 100 mm. • Heat exchanger material: Copper 			
37.1	Tank, horizontal, capacity 2m³ – type 1. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 5 m² • Power of electric heating element: 24 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1000 x 3200 mm. 			
37.2	Tank, horizontal, capacity 2m³ – type 2. Qty.: 2 pcs			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 6 m² • Power of electric heating element: 36 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø800 x 4500 mm. 			
37.3	Tank, horizontal, capacity 8 m³ Qty.: 1 pc			
	<ul style="list-style-type: none"> • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1500 x 4700 mm. 			
37.4	Tank, horizontal, capacity 10 m² Qty.: 1 pc			
	<ul style="list-style-type: none"> • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1500 x 6500 mm. 			

37.5	Tank, vertical, capacity 1m³ – type 1. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 2.5 m² • Power of electric heating element: 18 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø800 x 2300 mm. 			
37.6	Tank, vertical, capacity 1m³– type 2. Qty.: 2 pcs			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 2 m² • Power of electric heating element: 24 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø900 x 2100 mm. 			
37.7	Tank, vertical, capacity 1.5 m³ Qty.: 2 pcs			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 4 m² • Power of electric heating element: 24 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1000 x 2300 mm. 			
37.8	Tank, vertical, capacity 2 m³ – type 3 Qty.: 1 pc			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 5 m² • Power of electric heating element: 24 kW • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1000 x 3000 mm. 			
37.9	Tank, vertical, capacity 2 m³ – type 4. Qty.: 1 pc			

	<ul style="list-style-type: none"> Heat exchanger type: Hot-water-water Heat exchanger surface: 5 m² Insulation thickness-minimum: 100 mm. Dimensions: Ø1000 x 3000 mm. 			
37.10	Tank, vertical, capacity 2 m³ – type 5. Qty.: 1 pc			
	<ul style="list-style-type: none"> Insulation thickness-minimum: 100 mm. Dimensions: Ø1000 x 3000 mm. 			
37.11	Tank, vertical, capacity 2 m³ – type 6. Qty.: 2 pc			
	<ul style="list-style-type: none"> Heat exchanger type: Hot-water-water Heat exchanger surface: 5 m² Power of electric heating element: 36 kW Insulation thickness-minimum: 100 mm. Dimensions: Ø1100 x 2600 mm. 			
37.12	Tank, vertical, capacity 2 m³ – type 7. Qty.: 2 pc			
	<ul style="list-style-type: none"> Power of electric heating element: 18 kW Insulation thickness-minimum: 100 mm. Dimensions: Ø1100 x 2600 mm. 			
37.13	Tank, vertical, capacity 3 m³ – type 1. Qty.: 1 pc			
	<ul style="list-style-type: none"> Power of electric heating element: 24 kW. Insulation thickness-minimum: 100 mm. Dimensions: Ø1100 x 2600 mm. 			
37.14	Tank, vertical, capacity 3 m³ – type 2. Qty.: 1 pc			
	<ul style="list-style-type: none"> Heat exchanger type: Hot-water-water Heat exchanger surface: 7 m² Insulation thickness-minimum: 100 mm. Dimensions: Ø1300 x 2800 mm. 			

37.15	Tank, vertical, capacity 3 m³ – type 3. Qty.: 1 pc			
	<ul style="list-style-type: none"> • Heat exchanger type: Hot-water-water • Heat exchanger surface: 7 m² • Insulation thickness-minimum: 100 mm. • Dimensions: Ø1300 x 2800 mm. • Power of electric heating element: 24 kW. 			
38.	Frost protection anti-freeze concentrate Qty.: 5.840 lit			
	<p>Special corrosion inhibitors need to protect the metal and plastic materials, using in the solar system construction, including copper and aluminium, from corrosion and development of coatings and depositions as well.</p> <p>The fluid need to fulfil food-safe and does not corrode the standard sealing materials using in solar systems.</p> <ul style="list-style-type: none"> • Ready-mixed fluid Propylene-glycol • Operating temperature: from -24°C to +230°C • Density at 20°C: 1,02 - 1,04 g/cm³. • Viscosity at 20°C: 15 mm²/s. • Thermal conductivity of the fluid at 20°C: 0,4 W/mK. • The fluid must be chemically stabile during operation 			
39.	Expansion vessel for Solar Fresh Water tank – type 1. Qty.: 4 pcs			
	<ul style="list-style-type: none"> • Capacity: 18 lit. • Max. operating pressure: 10 bar. • Pre-pressure: 3 bar. • Connection dimension: Ø1“. 			
40.	Expansion vessel for Solar Fresh Water tank – type 2. Qty.: 6 pcs			

	<ul style="list-style-type: none"> Capacity: 25 lit. Max. operating pressure: 10 bar. Pre-pressure: 4 bar. Connection dimension: Ø1“. 			
41.	Expansion vessel for Solar Fresh Water tank – type 3. Qty.: 3 pcs			
	<ul style="list-style-type: none"> Capacity: 35 lit. Max. operating pressure: 10 bar. Pre-pressure: 5 bar. Connection dimension: Ø1“. 			
42.	Expansion vessel for Solar Fresh Water tank – type 4. Qty.: 10 pcs			
	<ul style="list-style-type: none"> Capacity: 50 lit. Max. operating pressure: 10 bar. Pre-pressure: 5 bar. Connection dimension: Ø1“. 			
43.	Expansion vessel for Solar Fresh Water tank – type 5. Qty: 5 pcs			
	<ul style="list-style-type: none"> Capacity: 80 lit. Max. operating pressure: 10 bar. Pre-pressure: 3 bar. Connection dimension: Ø1“. 			
44.	Expansion vessel for Solar Fresh Water tank – type 6. Qty: 2 pcs			
	<ul style="list-style-type: none"> Capacity: 100 lit. Max. operating pressure: 10 bar. Pre-pressure: 3 bar. Connection dimension: Ø1“. 			
45.	Expansion vessel for Solar Fresh Water tank – type 7. Qty: 7 pcs			

	<ul style="list-style-type: none"> • Capacity: 50 lit. • Max. operating pressure: 10 bar. • Pre-pressure: 1.5 bar. • Connection dimension: Ø1“. 			
46.	Expansion vessel for Solar Fresh Water tank – type 8. Qty: 4 pcs			
	<ul style="list-style-type: none"> • Capacity: 100 lit. • Max. operating pressure: 10 bar. • Pre-pressure: 1.5 bar. • Connection dimension: Ø1“. 			
47.	Expansion vessel for Solar Fresh Water tank – type 9. Qty: 2 pcs			
	<ul style="list-style-type: none"> • Capacity: 150 lit. • Max. operating pressure: 10 bar. • Pre-pressure: 3 bar. • Connection dimension: Ø1“. 			
48.	Expansion vessel for Solar Fresh Water tank – type 10. Qty: 3 pcs			
	<ul style="list-style-type: none"> • Capacity: 500 lit. • Max. operating pressure: 10 bar. • Pre-pressure: 1.5 bar. • Connection dimension: Ø1“. 			
49.	Circulation pumps for Solar Fresh water tank <ul style="list-style-type: none"> • Circulation pump for all hygienic conditions 			
49.1	Circulation pump – type 1. Qty: 1 pc			

	<ul style="list-style-type: none"> • Speed: n=2790 o/min. • Power: P=105W. • Circulation pump: capacity-max 3,8 m³/h, delivery head-max 3,4 m • Power Supply: U=230V; I=0,5 A. • Number of speeds: 3 			
49.2	Circulation pump – type 2. Qty: 1 pc			
	<ul style="list-style-type: none"> • Speed: n=2700 o/min. • Power: P=340W. • Circulation pump: capacity-max 12 m³/h, delivery head-max 10 m. • Power Supply: U=230V; I=1.62 A. • Number of speeds: 3 			
50.	Drain pump Qty: 3 pcs			
	<ul style="list-style-type: none"> • Drain pump as a mono block system for protection of solar equipment • Capacity max: 5.800 lit/h. • Delivery head max: 6 m. • Connection: R 5/4" 			
51.	Plate heat exchanger <ul style="list-style-type: none"> • The plate heat exchangers made of corrugated stainless steel plates. Antifreeze (solar side) or water (secondary side) flows through the plates in the counter flow principle. • Comply with the following Standards: <ul style="list-style-type: none"> ○ "Pressure Equipment Directive" 97/23/EC ○ "Directive on the quality of water intended for human consumption" 98/83/EC • Material: Stainless steel 1.4401 • Solder: Copper 			

51.1	Plate heat exchanger, capacity 13,3 kW Qty: 1 pc			
	<ul style="list-style-type: none"> • Primary side temperatures: max. +90°C, min. +47°C. • Secondary side temperatures: min. +30°C, max. +60°C. • Number of speeds: 2 • Flow: 0,302/0,383 m³/h, • Max. operating pressure: 10 bar. • Pressure drop: 29,3/18,3 mbar. • Connections: 1"-1". 			
51.2	Plate heat exchanger, capacity 26,7 kW Qty: 1 pc			
	<ul style="list-style-type: none"> • Primary side temperatures: max. +90°C, min. +57°C. • Secondary side temperatures: min. +25°C, max. +45°C. • Speed: 2 • Flow: 0,786/1,15 m³/h, • Max. operating pressure: 10 bar. • Pressure drop: 48,1/32,5 mbar. • Connections: 1"-1" 			
51.3	Plate heat exchanger, capacity 53,3 kW Qty: 1 pc			

	<ul style="list-style-type: none"> • Primary side temperatures: max. +90°C, min. +56,7°C. • Secondary side temperature: min. +25°C, max. +45°C. • Flow: 1,573/2,318 m³/h • Max. Operating pressure: 10 bar. • Pressure drop – primary side: 71,5 mbar • Pressure drop – secondary side: 51,8 mbar. • Connections: 1"-1" 			
51.4	Plate heat exchanger, capacity 107 kW Qty: 2 pcs			
	<ul style="list-style-type: none"> • Primary side temperatures: max. +90°C, min. +61°C. • Secondary side temperatures: min. +30°C, max. +60°C. • Flow: 3,624/3,1 m³/h. • Max. Operating pressure: 10 bar. • Pressure drop: 10,4/5,64 kPa. • Connections: 1"-5/4" 			
51.5	Plate heat exchanger, capacity 160 kW Qty: 2 pcs			
	<ul style="list-style-type: none"> • Primary side temperatures: max. +90°C, min. +53°C. • Secondary side temperatures: min. +20°C, max. +60°C. • Flow: 4,228/3,461 m³/h. • Max. operating pressure: 10 bar. • Pressure drop: 15,9/12 kPa. • Connections: 2"-2" 			
52.	Safety valve for solar accumulation tank. Comply with Standards EN 12516 - Industrial valves			

52.1.	Safety valve, R1" – type 1. Qty: 18 pcs			
	<ul style="list-style-type: none"> • Opening pressure: 3 bar • Connection R1" 			
52.2.	Safety valve, R1" – type 2. Qty: 29 pcs			
	<ul style="list-style-type: none"> • Opening pressure: 8 bar • Connection R1" 			
53.	Hard copper pipes Hard copper pipes for solar system pipelines. <ul style="list-style-type: none"> • Comply with the following Standards <ul style="list-style-type: none"> ○ Copper Pipes EN 1057, ○ Copper Fittings EN 1254-1-2-3-4 Dimensions and Quantities as shown below:			
53.1.	Cu Ø 54,0 x 1,5 mm Qty: 305 m			
53.2.	Cu Ø 42,0 x 1,0 mm Qty: 245 m			
53.3.	Cu Ø 35,0 x 1,0 mm Qty: 322 m			
53.4.	Cu Ø 28,0 x 1,0 mm Qty: 911 m			
53.5	Cu Ø 22,0 x 1,0 mm Qty: 682 m			
53.6	Connections, sealing, consumable material, provision for elbows, brackets, anchors, hangers and other consumable materials for ITEM 53 hard copper pipes. Qty: Lump sum			
54.	Double corrugated pipes for Sanitary hot water system DN16 Qty: 340 m			

	<p>The double corrugated pipe simplifies collector connection up to the roof insertion or the complete piping on to the solar station</p> <ul style="list-style-type: none"> • Double corrugated pipes in insulation • UV resistant, • Protection from mechanical strain, • Free of PVC and CFC, • Two-wire sensor cable: • Static bending radius: 25 mm • Double corrugated pipe width 100 mm • Double corrugated pipe height 50 mm • NP16 • Temperature range: from -270°C to +600°C. • Internal diameter: 16,3 / -0,4. • Outer diameter: 21,4 / -0,4. • Thickness of insulation: 14 mm. • Max. insulation temperature: 150°C. • Material: Stainless steel 1.4404 (AISI 316L), longitudinal weld, no braiding 			
55.	<p>Fittings for 102 m double corrugated pipes, DN 16/22 mm</p> <p>Qty: Lump sum</p>			
56.	<p>Double corrugated pipes for Sanitary hot water system DN20</p> <p>Qty: 210 m</p>			

	<p>The double corrugated pipe simplifies collector connection up to the roof insertion or the complete piping on to the solar station</p> <ul style="list-style-type: none"> • Double corrugated pipes in insulation • UV resistant, • Protection from mechanical strain, • Free of PVC and CFC, • Two-wire sensor cable: • Static bending radius: 30 mm • Double corrugated pipe width 110 mm • Double corrugated pipe height 55 mm • NP10 • Temperature range: from -270°C to+600°C. • Internal diameter: 20.4/-0.4. • Outer diameter: 26.7/-0.4. • Thickness of insulation: 14 mm. • Max. insulation temperature: 150°C. • Material: Stainless steel 1.4404 (AISI 316L), longitudinal weld, no braiding 			
57.	<p>Fittings for 63 m double corrugated pipes, DN 20/22 mm</p> <p>Qty: Lump sum</p>			

58.	PPR pipes for connecting systems of hot and cold fresh water tanks Comply with the following Standards: <ul style="list-style-type: none"> • ISO 15874-1: 2003 'Plastic piping system for hot and cold water installation - Polypropylene(PP) • ISO 15874-1: 1003 'Plastic piping system for hot and cold water installation - Polypropylene (PP) • DIN 84-77: 1999 - 07 'Polypropylene (PP) pipes'. • PP-R pipes defined by ISO-EN15874 standard., Dimensions and Quantities as shown below:			
58.1.	PPR 63 x 10,5 mm Qty: 315 m			
58.2.	PPR 50 x 8,4 mm Qty: 65 m			
58.3.	PPR 40 x 6,7 mm Qty: 205 m			
58.4.	PPR 32 x 5,4 mm Qty: 425 m			
58.5.	PPR 25 x 4,2 mm Qty: 65 m			
58.6.	Connections, sealing, consumable material, provision for elbows, brackets, anchors, hangers and other consumable materials for ITEM 58 PPR pipes. Qty: Lump sum			

59.	Steel pipes Comply with the following Standards: <ul style="list-style-type: none"> • EN 10266 Steel tubes, fittings • DIN 1629 Seamless circular tubes • DIN 2448 Plain end seamless steel tubes. • DIN 17100 Steel for general structural purposes. • DIN 17121 Seamless structural steel circular tubes • DIN 17124 Seamless circular tubes for engineering • EN 10 297 Seamless pipes for general engineering • DIN 1629 and DIN1630- seamless pipes • DIN2448 steel pipes. Corrosion protection with two coats of anti-corrosion protective paint Dimensions and Quantities as shown below:			
59.1.	Fe 60,3 x 2,9 mm Qty: 65 m			
59.2.	Fe 48,3 x 2,6 mm Qty: 127 m			
59.3.	Fe 33,7 x 2,6 mm Qty: 46 m			
60.	Connections, sealing, consumable material, provision for elbows, brackets, anchors, hangers, acetylene gas, and other consumable materials for ITEM 59 steel pipes. Qty: Lump sum			

	<p>Comply with the following Standards:</p> <ul style="list-style-type: none"> • EN ISO 5817.Fusion-welded joints in steel, • EN ISO 6520-1/2. welding processes • Non-destructive testing (NDT) – EN ISO 10893-112 • NDT of steel tubes – Parts 1-12 • EN ISO 10893-12 EN ISO 11666. • NDT Ultrasonic test of welded joints – Acceptance 			
61.	<p>Galvanized steel pipes</p> <p>Comply with the following Standards:</p> <ul style="list-style-type: none"> • EN 10 297 Pipes for general engineering • DIN 1629 and DIN1630- seamless pipes • DIN2448 steel pipes • ASTM A53 Pipe, steel, black and hot-dipped, zinc-coated, welded and seamless. <p>Dimensions and Quantities as shown below:</p>			
61.1.	<p>Fe-Zn 60,3 x 2,9 mm</p> <p>Qty: 18 m</p>			
61.2.	<p>Fe-Zn 48,3 x 2,6 mm</p> <p>Qty: 67 m</p>			
61.3.	<p>Fe-Zn 33,7 x 2,6 mm</p> <p>Qty: 11 m</p>			
61.4	<p>Connections, sealing, consumable material, provision for elbows, brackets, anchors, hangers, and other consumable materials for ITEM 61 galvanized steel pipes.</p> <p>Qty: Lump sum</p>			

62.	Insulation for Hard copper pipes Comply with the following Standards: <ul style="list-style-type: none"> • ASTM-C552 Pipe Thermal Insulation. • ASTM-C592 Mineral Fibre Blanket Insulation • ASTM-C303 Test method for Density of Pre formed Block • ASTM-165 Properties of Thermal Insulation • EN 253: 1994 Pre-insulated bonded pipe Dimensions and Quantities as shown below:			
62.1.	13 x 054 Qty: 305 m			
62.2.	13 x 042 Qty: 245 m			
62.3.	13 x 035 Qty: 322 m			
62.4.	13 x 028 Qty: 911 m			
62.5.	13 x 022 Qty: 682 m			
63.	Insulation for PPR piping Comply with the following Standards: <ul style="list-style-type: none"> • ASTM-C552 Pipe Thermal Insulation. • ASTM-C592 Mineral Fibre Blanket Insulation • ASTM-C303 Density of Pre formed Block • ASTM-165 Properties of Thermal Insulation • EN 253: 1994 Pre-insulated bonded pipe Dimensions and Quantities as shown below:			
63.1.	76/9 – m 305 Qty: 305 m			
63.2.	60/9 – m 70 Qty: 70 m			

63.3.	42/9 – m 130 Qty: 100 m			
63.4.	35/9 – m 365 Qty: 365 m			
63.5.	28/9 – m 75 Qty: 75 m			
64.	Three-way motor valve Qty: 2 pcs			
	Comply with the Standards for valve product ANSI-Class 125, ANSI-Class- 250 <ul style="list-style-type: none"> • Connection dimension: 2". • Max. operating pressure: 10 bar. • Torque at rated pressure: 6 Nm. • Max. operating temperature: 130°C. • Kvs = 40 m³/h 			
65.	Valves on steel and PPR pipes, NP10 Dimensions and Quantities as shown below:			
65.1.	R 2" Qty: 70 pcs			
65.2.	R 6/4" Qty: 80 pcs			
65.3.	R 5/4" Qty: 1 pc			
65.4.	R 1" Qty: 80 pcs			
65.5.	R 3/4" Qty: 231 pcs			
65.6.	R 1/2" Qty: 27 pcs			
66.	Thermometer for pipes and tanks, temperature range: from 0°C to + 100°C Qty: 100 pcs			

	Circle thermometer for mounting on tanks and pipes Ø1/2".			
67.	Manometer 0-10 bar for tanks and pipes Qty: 42 pcs			
	Manometer for mounting on tanks and pipes Ø1/2".			
68.	One-way valve R 6/4". Qty: 5 pcs			
	<ul style="list-style-type: none"> Operating pressure of 10 bar, Temperatures to 110° C. 			
69.	One-way valve R 1". Qty: 1 pc			
	<ul style="list-style-type: none"> Operating pressure of 10 bar, Temperatures to 110° C. 			
70.	One-way valve R 2". Qty: 3 pcs			
	<ul style="list-style-type: none"> Operating pressure of 10 bar, Temperatures to 110° C. 			
71.	Strainers in the set with brass mesh R 2" Qty: 3 pcs			
	<ul style="list-style-type: none"> Operating pressure of 10 bar, Temperatures to 110° C. 			
72.	Strainers in the set with brass mesh R 1" Qty: 1 pc			
	<ul style="list-style-type: none"> Operating pressure of 10 bar, Temperatures to 110° C. 			
73.	Insulation with wool and aluminium sheet coated Qty: 28 m2			
	<ul style="list-style-type: none"> New insulation for the existing tanks, Thickness of wool insulation 100 mm. Thickness of Al-sheet 0.5mm 			

	Dismounting and remounting works on exiting installation, items 74-102			
All items 74-86	The waste material from de-installation (dismantling): metal, plastic, building waste, must be disposed on appropriate place, on request of the management, site supervision or labour safety inspector			
74.	Dismantling and remounting existing tank connections Qty: 4 pcs			
	<ul style="list-style-type: none"> Make a new connection to the pump groups and the heat exchanger, DN 65. 			
75.	Dismantling and remounting existing tank 1.200 lit. Qty: 1 pc			
	<ul style="list-style-type: none"> Dismantling, dislocate and mounting of existing tank. 			
76.	Dismantling existing tank 1.500 lit. Qty: 2 pcs			
77.	Dismantling existing tank 2.000 lit. Qty: 7 pcs			
78.	Dismantling existing doors. Qty: 6 pcs			
79.	Dismantling existing windows. Qty: 1 pc			
80.	Removal existing partition wall with floor levelling for boiler positioning. Qty: 2 m³			
81.	Removal existing concrete structure Qty: 1 pc			
	<ul style="list-style-type: none"> Removal of existing concrete parts with dimensions 0.44 x 1.70 x 1.23 m 			

82.	Removal of existing wall, door in the archives, and removal of the old tank. Qty: 1 pc			
	<ul style="list-style-type: none"> Removal of the partition wall and dismantling and removal of the door in the archives Dismantling an old tank. 			
83.	Dismantling and removal old existing tank Qty: 12 pcs			
	<ul style="list-style-type: none"> Dismantling and handing over to the contractor the existing tanks with electric heaters 			
84.	Dismantling and removal of old tank, fence and part of pipeline. Qty: 1 pc			
	<ul style="list-style-type: none"> Dismantling and remove and removal of the existing old tank volume 300 lit. Removal existing protective fence. Removal part of the existing pipelines 			
85.	Dismantling and removal of existing pipeline 2” Qty: 1 pc			
86.	Removal of the part of existing wall for entrance of new tank Qty: 2 m3			
87.	Laying of the new tanks in the machine room Qty: 3 pcs			
	<ul style="list-style-type: none"> Tanks need to enter through a section of the roof. Construct steel structure above the boilers for entering the tanks. 			

Item from 88. to 99.	Standards to comply with steel profiles products <ul style="list-style-type: none"> • EN 10 025 - Hot rolled products of structural steels, • EN 10 210-1/2 - Hot finished structural hollow sections of non-alloy and fine grain steels, Part 1: Technical delivery conditions, Part 2 Tolerances, dimensions, properties. • ISO 630-2 (TDC) and ISO 657-14 (DS) 			
88.	Steel profile installation in the building structure. Qty: 115 kg			
	<ul style="list-style-type: none"> • Installation of steel L profiles 70x70x7mm in concrete structures, for relief from the weight of the tank 			
89.	Steel profile installation for reinforcement in the building structure, profiles 70x70x7mm Qty: 60 kg			
	<ul style="list-style-type: none"> • Reinforcement of the base with L profiles 70x70x7mm 			
90.	Steel box profile installation in the roof structure, - type 1. Qty: 65 kg			
	<ul style="list-style-type: none"> • Steel box profile 30x50x2 mm for support of roof solar collectors. 			
91.	Steel box profile installation in the roof structure, - type 2. Qty: 90 kg			
	<ul style="list-style-type: none"> • Steel box profile 30x40x2 mm for support of roof solar collectors. 			
92.	Steel box profile installation in the roof structure, - type 3. Qty: 1030 kg			

	<ul style="list-style-type: none"> Steel box profile 30x40x2 mm for support of roof solar collectors, with profile “saddle” 			
93.	Steel saddle reinforcement profile installation in the building structure. Qty: 80 pcs			
94.	Steel IP-profile installation in the building structure, profiles 200x200x8 mm, total length: 120 m Qty: 2.100 kg			
	<ul style="list-style-type: none"> IPB1100 (HEA) profiles 			
95.	Steel plates installation in the building structure Qty: 70 kg			
	<ul style="list-style-type: none"> Steel plates, 300x300x8 mm - 12 pcs. Plates are welded 			
96.	Steel box profile installation for FPC substructure Qty: 7000 kg			
	<ul style="list-style-type: none"> Installation of steel boxes 80x80x4 mm, 70x70x4 mm and 40x40x3 mm. Profiles 70x70x4mm mounted on the smaller roof. Reinforced with 40x40x3 mm. Aluminium substructure for FPCs should be mounted on the steel boxes 70x70x4 mm. Make anchor (frontal) slab 200x200x10 mm. Make 10 sets of steel construction. Steel boxes 80x80x4 mm and 40x40x3 mm. Aluminium substructure for FPCs is mounted on the steel boxes 80x80x4 mm. Make anchor slab 200x200x10 mm. 			
97.	Steel box profile installation in the building structure Qty: 31 kg			

	<ul style="list-style-type: none"> • Production installation on-site of steel box profile • Profile precisely welded • Paint it with anti-corrosion colour, in two layers. 			
98.	Metal wall panel in the building structure. Qty: 13 m2			
	<ul style="list-style-type: none"> • Production installation on-site of steel box profile • Made of galvanized sheet metal and rock wool 80 mm thick • The doors with dimensions of 101x205 cm. 			
99.	Levelling the final layer of the floor in the existing building structure Qty: 1 m3			
	<ul style="list-style-type: none"> • Levelling final layer of the floor on the existing concrete foundation. 			

	STEEL CONSTRUCTIONS			
	Standards to comply with steel profiles products <ul style="list-style-type: none"> • EN 10 025 - Hot rolled products of structural steels, • EN 10 210-1/2 - Hot finished structural hollow sections of non-alloy and fine grain steels, Part 1: Technical delivery conditions, Part 2 Tolerances, dimensions, properties. • ISO 630-2 (TDC) and ISO 657-14 (DS) 			
100.	Processing and installation of Steel box profile 30x40x2 mm Qty: 570 kg			
	<ul style="list-style-type: none"> • Steel box profile 30x40x2 mm, for the support of roof solar collectors • Strengthen with the "saddle" as per drawings • Anti-corrosive protection in 2 coats 			
101.	Steel box profile 100x100x3 mm Qty: 540 kg			
	<ul style="list-style-type: none"> • Steel box profile 100x100x3 mm for the support of roof solar collectors, • Steel box profile 100x100x3 mm for the platform which supporting the solar collectors on the façade. • Make anticorrosive protection in 2 coats. 			
102.	Steel box profile 180x80x5 mm Qty: 450 kg			
	<ul style="list-style-type: none"> • Steel box profile 180x80x5 mm, for the support boiler in the boiler room. • Make anticorrosive protection in 2 coats. 			

	INSTALLATION FOR HOT WATER HEATING WITH OIL FIRED BOILER			
103.	Light fuel boiler capacity 80-120 kW Qty: 1 pc			
	Product must comply with Standards: <ul style="list-style-type: none"> • EN 12952 - Water tube boilers • EN 12953 - Shell boilers • EN 13445 - Fired pressure vessels • Boiler Efficiency Directive 92/42/EEC Characteristics: <ul style="list-style-type: none"> • Capacity: 80 - 120 kW • Water volume in the boiler: max 225 lit. • Max. operating temperature: +90°C. • Max. operating pressure 3 bar. • Flue gas pipe diameter: 180mm. • Forward and return flow connection: DN 2". • Filling and flushing connection: R3/4". • Safety connection: R1". • The flue gases temperature: +150°C • Safety vent group 2,5bar • Basic boiler control with operating a two-stage oil burner 			
104.	Contact thermostat for the Boiler – type 1. Qty: 1 pc			
	Contact thermostat for the operation of boiler pump. <ul style="list-style-type: none"> • Thermostat set on +65°C 			

105.	Contact thermostat for the Boiler – type 2. Qty: 1 pc			
	Contact thermostat for the operation of boiler pump. <ul style="list-style-type: none"> Thermostat set on +90°C 			
106.	Two-stage with servo motor light oil burner Qty: 1 pc			
	Product must comply with Standards: <ul style="list-style-type: none"> EN 267 Machinery Directive 98/37/EC Electromagnetic Compatibility Directive 89/336/EEC Low Voltage Directive 73/23/EEC Boiler Efficiency Directive 92/42/EEC Characteristics: <ul style="list-style-type: none"> Capacity: 70 - 200 kW, Oil flow: 5,9 - 16,8 kg/h, Connection: 1x230V, 50Hz. Energy consumption: 250 W, Digital combustion management unit Light oil filter. 			
107.	Circulation pump – type 1. Qty: 1 pc			
	<ul style="list-style-type: none"> Circulation pump: capacity-max 2,3 m³/h, delivery head 7.7m (max 9,5m) Speed: 3 Power Supply: U=230V, 50/60 Power consumption: 0,37 A Energy consumption: 85 W. 			
108.	Circulation pump – type 2. Qty: 1 pc			

	<ul style="list-style-type: none"> • Circulation pump: capacity-max 5,8 m³/h, delivery head 13.2m (max 19.0m) • Speed: 3 • Power Supply: U=230V, 50/60 • Power consumption: 0,95 A • Energy consumption: 195 W. 			
109.	Expansion vessel Qty: 1 pc			
	<ul style="list-style-type: none"> • Capacity: 50 lit. • Max. operating pressure: 10 bar • Connection dimension: 1". 			
110.	Safety valve Qty: 1 pc			
	<ul style="list-style-type: none"> • Possibility of manual opening pressure adjustment • Dimension: DN25/40 PN16. • Diameter of the valve seat: d0=22,5mm. • Flow area: A0=398 mm². • Flow coefficient: k_d=0,54. 			
111.	Stop valve with counter flanges, screws and other elements. Valves working with steam pressure of 0.5 bar. Dimensions and Quantities as shown below:			
111.1.	DN80 PN16 Qty: 2 pcs			
111.2.	DN50 PN16 Qty: 4 pcs			
111.3.	DN25 PN16 Qty: 4 pcs			
111.4.	DN15 PN16 Qty: 2 pcs			

112.	Stop valve with counter flanges, screws and other elements. Valves working with hot water temperature of 120°C. Dimensions and Quantities as shown below:			
112.1.	DN50 PN16 Qty: 3 pcs			
112.2.	DN20 PN16 Qty: 2 pcs			
113.	Stop valve Valves working with hot water temperature of 120°C. Dimensions and Quantities as shown below:			
113.1.	R6/4", NP16 Qty: 2 pcs			
113.2.	R1", NP16 Qty: 1 pc			
114.	Balancing valve Qty: 1 pc			
	Valves working with hot water temperature of 120°C • Dimension: R2"			
115.	Strainer Qty: 1 pc			
	Valves working with hot water temperature of 120°C • Dimension: R2"			
116.	One-way valve Qty: 1 pc			
	Valves working with hot water temperature of 120°C • Dimension: R6/4"			

117.	Insulated Gas flue duct Qty: 1 pc			
	Thermally insulate flue duct: ø180mm Length: 3m, Manual flap to close the chimney: ø180mm Connect to existing flues duct Ø700mm of the steam boilers.			
118.	Dismantling existing valves Dimensions and Quantities as shown below:			
118.1.	DN80 PN16 Qty: 2 pcs			
118.2.	DN25 PN16 Qty: 4 pcs			
119.	Dismantling pressure regulator Qty: 1 pc			
	Dismantling of the pressure regulator light fuel oil			
120.	Stop valve Qty: 3 pcs			
	Stop valve, dimensions: DN32 PN16			
121.	Inlet-outlet connection of light oil Qty: 1 pc			
	<ul style="list-style-type: none"> • Penstock combination of the Inlet and outlet of light fuel oil • Dimensions G 3/8 " • Simultaneous closure supply-return of the limit switch. 			
122.	Flexible pipes Qty: 4 m			
	<ul style="list-style-type: none"> • Flexible pipes, the dimensions G3 / 8 ", • Supply and return of the light oil. 			
123.	Separator of gas and air Qty: 1 pc			
	Separator gas and air, dimensions DN40 / 25.			

124.	Steel pipes Comply with the following Standards: <ul style="list-style-type: none"> • EN 10266 Steel tubes, fittings • DIN 1629 Seamless circular tubes • DIN 2448 Plain end seamless steel tubes. • DIN 17100 Steel for general structural purposes. • DIN 17121 Seamless structural steel circular tubes • DIN 17124 Seamless circular tubes for engineering • EN 10 297 Seamless pipes for general engineering • DIN 1629 and DIN1630- seamless pipes • DIN2448 steel pipes. Corrosion protection with two coats of anti-corrosion protective paint Dimensions and Quantities as shown below:			
124.1.	R 1/2" - Ø 21,3 x 2,0 mm Qty: 4 m			
124.2.	R 1" - Ø 33,7 x 2,6 mm Qty: 24 m			
124.3.	R 6/4" - Ø 48,3 x 2,6 mm Qty: 12 m			
124.4.	R 2" - Ø 60,3 x 2,9 mm Qty: 28 m			

125.	Connections, sealing, consumable material, provision for elbows, brackets, anchors, hangers, acetylene gas, and other consumable materials for ITEM 124 steel pipes. Comply with the following Standards: <ul style="list-style-type: none"> • EN ISO 5817.Fusion-welded joints in steel, • EN ISO 6520-1/2. welding processes • Non-destructive testing (NDT) – EN ISO 10893-112 • NDT of steel tubes – Parts 1-12 • EN ISO 10893-12 EN ISO 11666. • NDT Ultrasonic test of welded joints – Acceptance Qty: Lump sum			
126.	Steel pipes for light oil fuel pipeline Qty: 42 m			
	Corrosion protection with two coats of anti-corrosion protective paint <ul style="list-style-type: none"> • Dimension: R 5/4" - Ø 42,4 x 2,6 mm 			
127.	Insulation of pipes Qty: 16 m2			
	<ul style="list-style-type: none"> • Thermal insulation for pipes for light fuel oil. • Insulation with mineral wool 40mm in the AL-shell thickness = 0.6 mm. 			
128.	Vent pots Qty: 2 pcs			

	<ul style="list-style-type: none"> • Dimension: Ø114,3x3,6mm x height 200mm, • Draining pipe: Ø21,3x2,0 - 2m • Drain valve R1 / 2 " 			
129.	Thermometer Qty: 2 pcs			
	Circle shape thermometer for mounting on boiler pipes Ø1/2", operating temperature 0 -160°C.			
130.	Manometer Qty: 2 pcs			
	Manometer for mounting on boiler Ø1/2", operating pressure 0-10 bar			
131.	Concrete MB30 Qty: 2.5 m3			
	<ul style="list-style-type: none"> • Baseplate thickness of 16 cm • Reinforcements along the edge of the board • Supply installation reinforcement MA 500/560 and 400/500 RA. • Supply and installation of the boiler to 8 cm thick, on previously derived base 			
132 .	Dismantling - re-mounting barriers Qty: 1 pc			
	<ul style="list-style-type: none"> • Dismantling and re-mounting of protective barriers to entered of solar tanks, • The waste material from de-installation (dismantling): metal, plastic, building waste, must be disposed on appropriate place, on request of the management, site supervision or labour safety inspector 			

133.	Dismantling - re-mounting barriers and existing vessel Qty: 1 pc			
	<ul style="list-style-type: none"> • Dismantling, relocation and re-mounting existing vessels for boiler relief. • The waste material from de-installation (dismantling): metal, plastic, building waste, must be disposed on appropriate place, on request of the management, site supervision or labour safety inspector 			

	ELECTRICAL INSTALLATIONS			
	for 15 Penalty institutions supported with Solar panel systems (according to the Beneficiary's Distribution List) with total 35 Solar thermal systems and 35 sub-systems for Electrical installations			
134.	SWITCH GEAR CABINETS			
	Switchgear cabinet, multifunctional, wall mounting, steel coated with epoxy polyester powder, colour grey RAL7030, with the door assembled with the lock and pair of keys, include all material for complete assembly (mounting plates and supports, rating plates, connection terminals, wires, insulators, wiring cable trays, cable glands), Protection degree IP66 according to standards IEC60529 and IK10 according to standards IEC 62262: Cabinet dimensions:			
134.1.	300x300x200 mm Qty: 29 pcs			
134.2.	400x300x200 mm Qty: 3 pcs			
134.3.	600x500x200 mm Qty: 3 pcs			
	Electrical equipment:			
134.4.	Main cam switch 1P, 16A, door mounted Qty: 31 pcs			
134.5.	Main cam switch 3P, 16A, door mounted Qty: 1 pc			

134.6.	Main cam switch 3P, 25A, door mounted Qty: 3 pcs			
134.7.	Command cam switch MAN-OFF-AUT, door mounted, connection:10-51-U Qty: 61 pcs			
134.8.	Command cam switch MAN-OFF-AUT, door mounted, connection:16-90-U Qty: 2 pcs			
134.9.	Light indicator, green colour, 230Vac, 1,2W, door mounted Qty: 61 pcs			
134.10.	Three pole motor contactor, AC3, 230Vac, 10A, auxiliary contacts 1NC+1NO Qty: 61 pcs			
134.11.	Three pole thermal protection with adjustable range 0,18-0,27A Qty: 48 pcs			
134.12.	Three pole thermal protection with adjustable range 0,2-0,6A Qty: 1 pc			
134.13.	Three pole thermal protection with adjustable range 0,4-0,6A Qty: 1 pc			
134.14.	Three pole thermal protection with adjustable range 0,8-1,2A Qty: 2 pcs			
134.15.	Three pole thermal protection with adjustable range 0,63-1A Qty: 1 pc			
134.16.	Three pole thermal protection with adjustable range 1-1,4A Qty: 2 pcs			

134.17.	Three pole thermal protection with adjustable range 1,2-1,8A Qty: 2 pcs			
134.18.	Three pole thermal protection with adjustable range 2,4-4A Qty: 4 pcs			
134.19.	Automatic circuit breaker, C6, 1P, 10A, 6kA, mounting on the DIN Bar (EN50022) Qty: 131 pcs			
134.20.	Automatic circuit breaker, C10, 1P, 10A, 6kA, mounting on the DIN Bar (EN50022) Qty: 3 pc			
134.21.	Automatic circuit breaker, C16, 3P, 16A, 6kA, mounting on the DIN Bar (EN50022) Qty: 1 pc			
135.	INSTALLATION CABLES			
	The position includes delivery of all materials for making the terminal connection points, installation and connection using the cables type NHXHX-J laid in part on the cable trays, in part inside the PVC pipes, in part directly on the wall/roof using the appropriate cable supports. Cables:			
135.1.	NHXHX-J 3x1,5mm² Qty: 1.015 m			
135.2.	NHXHX-J 3x2,5mm² Qty: 115 m			
135.3.	NHXHX-J 3x4mm² Qty: 395 m			

135.4.	NHXHX-J 5x2,5mm2 Qty: 55 m			
135.5.	NHXHX-J 5x4mm2 Qty: 130 m			
136.	STEEL PROFILES			
	The position includes delivery and installation of all materials (steel profiles and fixing materials), for making the protective and supporting structures for cables, including base and final painting. Qty: 42 kg			
137.	CROSS JOINTS			
	The position includes delivery and installation of the 60x60mm three plates cross joints for extension and branching of the Fe/Zn tape. Qty: 315 pcs			
138.	EQUIPOTENTIAL BONDING			
	The position includes delivery and installation of Fe/Zn 20x3mm tape for grounding of the solar panels, mounted on the roof and wall using supports at every 1m. The tape must be connected to the existing grounding of the facility. Qty: 1.400 m			
139.	GALVANIC CONNECTIONS			

	<p>The position includes delivery and installation of all materials for the galvanic connection of the metallic parts of all hydro system, thermal solar systems and supports of solar panels.</p> <p>Connection must be made by welding or screwing including anticorrosive protection.</p> <p>Qty: 292 pcs</p>			
140.	BRIDGING GALVANIC CONNECTIONS			
	<p>The position includes delivery and installation of all materials for the bridging galvanic connection for flanges, valves, pipes, pumps. Using the bridges made by P/F 1x16mm² wire completed with cable terminals on both sides.</p> <p>Qty: 40 pcs</p>			
141.	GALVANIC CONNECTIONS of Al sheet			
	<p>The position includes delivery and installation of all materials for the galvanic connection from Fe/Zn tape to Al sheet with a length of 10cm to overlap by riveting.</p> <p>Qty: 20 pcs</p>			
142.	CABLE TRAYS			
	<p>The position includes delivery and installation of deep galvanized cable tray 100x60mm with cover, including all materials for completing the position (brackets, supports, joints, L bows, "T" elements).</p> <p>Qty: 435 m</p>			

All items	Installation must be performed by contractor or authorised service provider. All the equipment must include all necessary parts and standards for its installation.			
All items	<p>Testing of all basic functions of the equipment on a set of producers standard samples commonly used for the corresponding equipment.</p> <p>Commissioning – complete testing, control and final regulation of all 35 Solar thermal systems for Sanitary hot water system.</p>			
For All 35 thermal solar syst.	Training for minimum 2 persons per Penalty institution (upon delivery) on equipment handling (familiarisation during installation - working with the equipment in all basic functions of the equipment), equipment maintenance.			
For All 35 thermal solar syst.	Technical documentation for equipment (As-build documentation / Operating manuals / Users Guide / Equipment operating instructions / Cleaning procedures / Maintenance procedures / Calibration procedures) upon delivery in English and Serbian.			

<p>All items</p>	<p>Warranty</p> <p>Tenderers must provide local reliable warranty service agent providing maintenance and the rapid supply of equipment spare parts and consumables for the Warranty duration of one year.</p> <p>Offer must include warranty service description including:</p> <ul style="list-style-type: none"> • Service organisation contact data including name, postal address, telephone number, fax number and e-mail address; • Help Desk (phone) support, which must be available during working hours, 8AM – 6PM; • Guaranteed maximum response time to submitted maintenance support request (fax or e-mail) of 1 (one) working day; • Guaranteed that any requests for services will be attended to within 24 hours; • Guarantee that all items can be repaired or alternatively replaced within a maximum of 72 hours; <p>Guarantee that genuine spare parts and consumables will be available for a period of minimum 3 years from the date of final acceptance of the equipment.</p>			
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All items	<p>Commercial warranty</p> <p>1 year (after the end of 1year standard warranty) in accordance with the conditions laid down in Article 32 of the General Conditions.</p> <p>Tenderer must provide a detailed description of the organisation of the proposed service and maintenance (e.g. name of the authorised service provider).</p>			
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