

2. Quotation basis

2.1. Plant data

Country of installation	Lithuania	
Maximum installation height above mean sea level	50	m
Minimum ambient temperature	10	°C
Maximum ambient temperature	40	°C
Supply voltage	400	V
Power frequency	50	Hz

2.2. Technical data Hot water boiler

Medium	Wasser	
Safety temperature (TS)	110	°C
Flow temperature	95	°C
Return temperature	65	°C
Fuel gas	Natural gas E	
Lower calorific value	35.00	MJ/Nm ³
	9.72	kWh/Nm ³
O ₂ content in dry flue gas	3.00	%
NO _x requirement **	95	mg/Nm ³
Fuel oil	Fuel oil (light oil EL)	
Lower calorific value	42.80	MJ/kg
O ₂ content in dry flue gas	3.00	%
NO _x requirement **	200	mg/Nm ³
Combustion air temperature	25	°C
Type of control	SPS	

* Assumption

** Deviation from the required value possible

Hot water boiler 1

Amount	1.00	pcs
Nominal heat output	2,300	kW

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Project: Telsiai Litesko Termolink, 87144 Telšiai
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Max. allowable operating pressure (PS)	10.0	bar
Minimum return temperature boiler	65	°C
Minimum return temperature ECO	65	°C
Temperature spread boiler	30	K
Fuels	Gas	
Main fuel	Gas	
Achieved efficiency (main fuel)	92.20	%

3. Delivery description

3.1. Hot water boiler

Item.	Material description	Total Price
1	Hot water boiler plant	
1.1	Shell boiler	
1.1.1	<p>For the combustion of gas to DVGW Code of Practice G260/ I and II and fuel oil to DIN 51603-1,3 in accordance with the equipment selected and the operating conditions required.</p> <p>Shell boiler in a horizontal design, optimised to withstand stress, implemented as a three-pass boiler.</p> <p>Smoke tubes are arranged above and to the side of the combustion chamber.</p> <p>The design of the smoke tube array offers high reliability in operation due to:</p> <ul style="list-style-type: none"> • Clearances that reduce stress • Support of harmonic convection • Welding in positions that exclude constrained conditions <p>Internal, water-cooled, rear reversing chamber with no wearing parts such as refractory lining.</p> <p>Cleaning aperture at the back of the flame chamber</p> <ul style="list-style-type: none"> • Cleaning aperture at the back of the flame chamber • Good accessibility in turning chamber and flame pipe • To facilitate commissioning, maintenance, inspection and testing. • With sight tube and female connection gate • Hinges facilitate opening without lifting tackle <p>Burner entry point with refractory lining, suitable for the use of pressure atomising burners.</p> <p>For rotary atomizer burners, the details must be agreed between the customer and Viessmann when an order is placed.</p> <p>Maximum availability with low downtimes can be ensured through high quality standards for material, manufacturing and production processes.</p> <p>Water deflectors aid the even distribution of the return water. No minimum flow rate required.</p> <p>Two female connections in the boiler flow connector for safety and control equipment.</p> <p>Reversing chamber with pivoting boiler doors.</p> <p>In each door there is special light insulation, which is protected on the flue gas side by a plate.</p>	

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	<p>Boiler doors can be opened without removing the burner and/or fuel supply.</p> <p>Boiler support to be installed on even and level foundations</p> <ul style="list-style-type: none"> • With 4 holes for lifting tackle for secure transport and handling • With connection for earth lug • With primer coating applied <p>Thermally insulated flue gas collector, with condensate drain nipple and inspection port.</p> <p>Full thermal insulation of the boiler body with insulation material. The casing is made from metal.</p> <p>The selected design prevents thermal bridges.</p> <p>Certified according to European regulation on equipment for the combustion of gaseous fuels. (GAR) Appliances Directive).</p> <p>Boiler packaging with foil as transport/installation protection.</p> <p>As packaging materials are film or other suitable materials are used.</p> <p>Specification, based on:</p> <ul style="list-style-type: none"> - Boiler sizing details in accordance with point 2 of this quotation - Determined with reference to EN 12953 <p>Accuracy of values as part of mathematical boiler calculation models.</p> <p>Heating output 100 % load</p> <table> <tr> <td>- Gas</td><td>2,000</td><td>kW</td></tr> <tr> <td>- Fuel oil EL</td><td>2,000</td><td>kW</td></tr> </table> <p>Combustion heating output 100 % load</p> <table> <tr> <td>- Gas</td><td>2,169</td><td>kW</td></tr> <tr> <td>- Fuel oil EL</td><td>2,150</td><td>kW</td></tr> </table> <p>Standard efficiency according to DIN 4702-8, flow / return temperature 75/60 ° C, sliding driving style</p> <table> <tr> <td>- Gas</td><td>94.50</td><td>%</td></tr> <tr> <td>- Fuel oil EL</td><td>94.90</td><td></td></tr> </table> <p>Boiler efficiency 100 % load</p> <table> <tr> <td>- Gas</td><td>92.20</td><td>%</td></tr> <tr> <td>- Fuel oil EL</td><td>93.00</td><td>%</td></tr> </table> <p>Boiler efficiency 80 % load</p>	- Gas	2,000	kW	- Fuel oil EL	2,000	kW	- Gas	2,169	kW	- Fuel oil EL	2,150	kW	- Gas	94.50	%	- Fuel oil EL	94.90		- Gas	92.20	%	- Fuel oil EL	93.00	%	
- Gas	2,000	kW																								
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- Gas	2,169	kW																								
- Fuel oil EL	2,150	kW																								
- Gas	94.50	%																								
- Fuel oil EL	94.90																									
- Gas	92.20	%																								
- Fuel oil EL	93.00	%																								

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Item.	Material description	Total Price	
	- Gas	93.00	%
	- Fuel oil EL	93.50	%
	Boiler efficiency 60 % load		
	- Gas	93.70	%
	- Fuel oil EL	94.00	%
	Boiler efficiency 40 % load		
	- Gas	94.40	%
	- Fuel oil EL	94.50	%
	Flue gas loss 100 % load		
	- Gas	7.26	%
	- Fuel oil EL	6.45	%
	Radiation loss 100 % load		
	- Gas	0.50	%
	- Fuel oil EL	0.51	%
	Flue gas temperature 100 % load		
	- Gas	184	°C
	- Fuel oil EL	169	°C
	Flue gas temperature 80 % load		
	- Gas	165	°C
	- Fuel oil EL	155	°C
	Flue gas temperature 60 % load		
	- Gas	144	°C
	- Fuel oil EL	139	°C
	Flue gas temperature 40 % load		
	- Gas	120	°C
	- Fuel oil EL	120	°C
	Fuel throughput 100 % Last		
	- Gas	223.00	m³/h
	- Fuel oil EL	181	kg/h
	Flue gas volumetric flow rate dry 100 % load		
	- Gas	2,286	Nm³/h

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Item.	Material description	Total Price	
	- Fuel oil EL	2,017	Nm³/h
	Flue gas volumetric flow rate moist 100 % load		
	- Gas	4,665.24	m³/h
	- Fuel oil EL	3,411.00	m³/h
	Flue gas mass flow rate 100 % load		
	- Gas	3,434	kg/h
	- Fuel oil EL	2,801	kg/h
	Max. flue gas pressure drop 100 % load		
	- Gas	6.0	mbar
	- Fuel oil EL	5.4	mbar
	Combustion chamber loading		
	- Gas	1.56	MW/m³
	- Fuel oil EL	1.55	MW/m³
	Flue gas pressure at boiler flue gas connection	+/- 0	mbar
	Boiler heating surface, flue gas side	59,8	m²
	Flue gas volume	2,92	m³
	Max, permissible operating pressure	10	bar
	Boiler water capacity	5.32	m³
	Connectors		
	- Boiler flow	150.00	16.00
	- Boiler return	DNnull	16.00
	- Safety valve	DN40	PN40
	- Number of safety valve connector	1.00	
	Dimensions		
	- Total length of boiler incl. thermal insulation	3,930	mm
	- Total width of boiler incl. thermal insulation	2,020	mm
	- Total height of boiler incl. thermal insulation	2,370	mm
	Shipping dimensions incl. packaging		
	- Shipping length	3,950	mm

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Item.	Material description	Total Price	
	- Shipping width	2,070	mm
	- Shipping height	2,400	mm
	Note		
	All dimensions without equipment and, if offered, without taking into account the customer-specific orientation of the flue outlet.		
	Shipping weight \pm 10 %	6.00	t
	Flue gas connection		
	- Inside dimensions	785x400	
	- Orientation	rear	
	Connection condensate drain nipple	1 1/2"	
	Thermal insulation material	lamella mat\	
	Thermal insulation thickness boiler coat	100	mm
	Casing material	Sheet steel, galvanised, coated	
	Casing colour	Vitosilver	
	1.00 PC		
1.2	Economiser		
1.2.1	Economiser for hot water boiler systems <ul style="list-style-type: none"> • Designed as a non-condensing appliance • Primary fuel: Gas • Secondary fuel: HEL (DIN 51603-1) • Heat exchanger unit made of round tubes with high spiral fins • Flange to the flue gas connection on the boiler side and chimney side • Drain connector • Air vent connector Thermal insulation over entire casing, with insulating material and metal jacket.		
	Specifications Economiser, based on		
	- Design data for the Economiser according to data sheet		
	- Averaged values for 100 % load		

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Item.	Material description	Total Price	
	Data Economiser		
	Economiser size	1	
	Permissible operating pressure boiler	10	bar
	Max. safety temperature boiler	110	°C
	Water flow rate	59.42	m³/h
	Max. pressure drop on water side	220.0	mbar
	Min. water inlet temperature		
	- Gas	65	°C
	- EL fuel oil	65	°C
	Boiler efficiency, economiser at 100 % load		
	- Gas	96.00	%
	- EL fuel oil	96.40	%
	Economiser heating output		
	- Gas	82	kW
	- EL fuel oil	73	kW
	Flue gas temperature, economiser outlet at 100 % load		
	- Gas	101	°C
	- EL fuel oil	93	°C
	Flue gas side pressure drop at 100 % load		
	- Gas	2.5	mbar
	Connections		
	- Flue gas on chimney side inside diameter	785 x 400	
	- Flue gas connection alignment	rear	
	- Inlet on the water side	DN150 PN40	
	- Outlet on water side	DN150 PN40	
	1 PC		
1.2.2	Flue gas hood/transition piece, thermally insulated. Matches the boiler side flue gas connection. Flue gas hood, thermally insulated. Matches the ECO flue gas connection.		

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