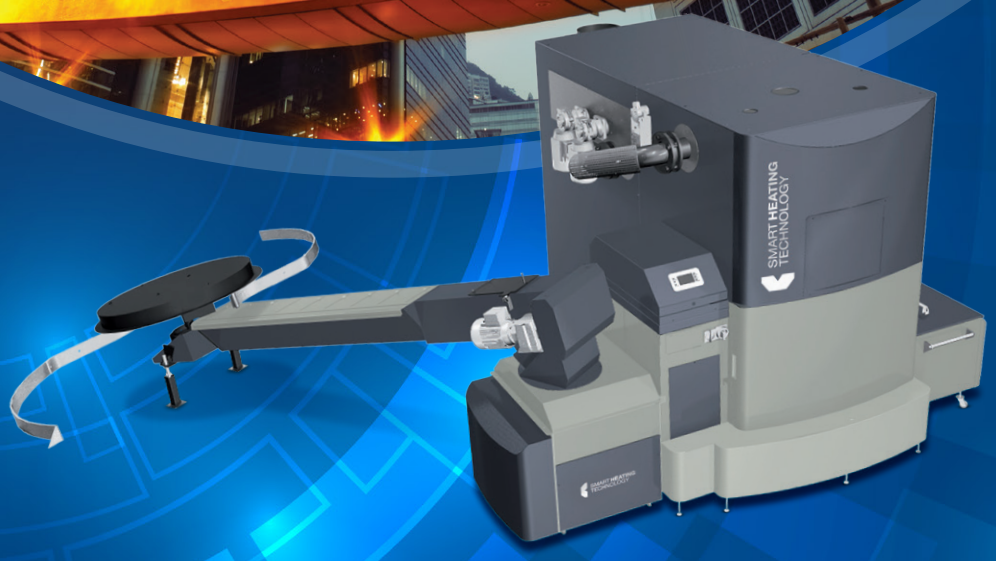
SMART **HEATING** TECHNOLOGY

Purity to Nature
Savings to Clients
Comfort to Users



AUTOMATIC BIOMASS BOILER

SMART 150 kW

▪ Fully automatic, ecologic boiler with excellent features ▪ Technical solution flexibility ▪ Multiple fuel possibility ▪ Economical and ecological operation ▪ Efficiency 96 % ▪ Output modulation 30–100 % ▪ Lambda sensor ▪ Ceramic Burner Option ▪ Vibrating Burner Plate Option ▪ Low Maintenance & Service requirements ▪ Heating circuits regulation ▪ Cascade installation solutions ▪ Mobile phone control ▪ Internet control ▪ Mobile container solutions ▪ Special boiler accessories

AUTOMATIC BIOMASS BOILER

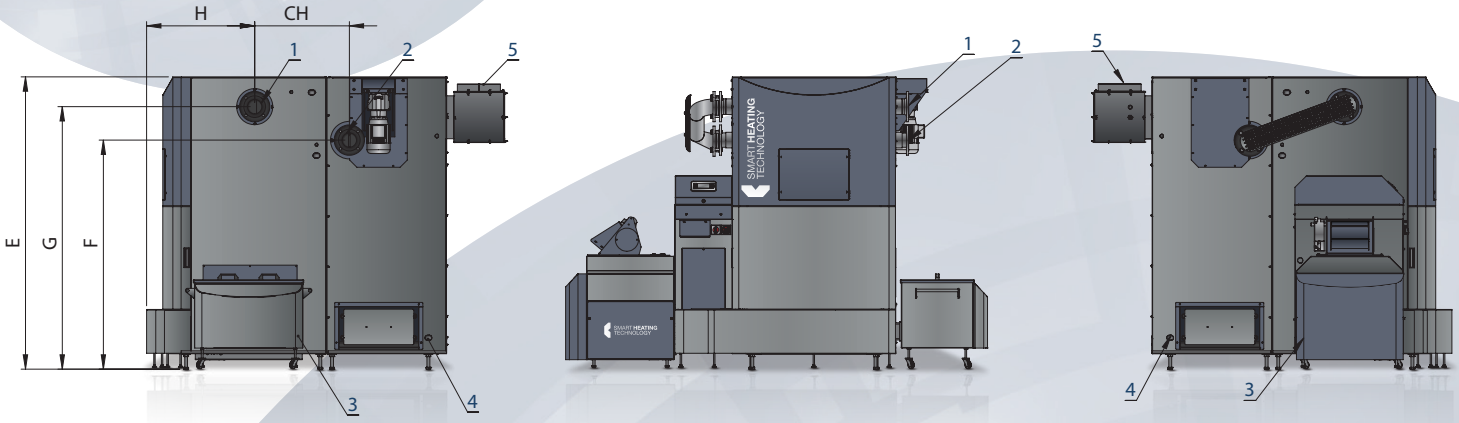
SMART 150 kW

SMART HEATING TECHNOLOGY

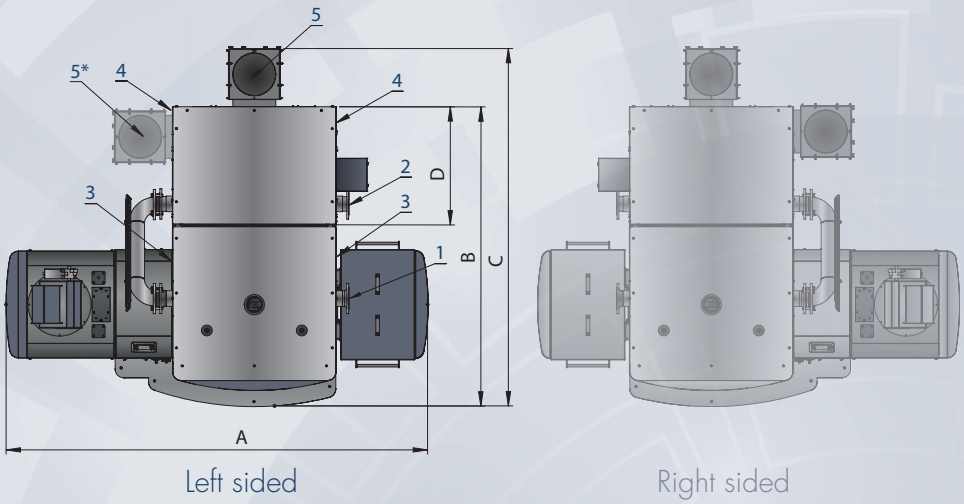
ČSN-EN 303.5/2013

ISO 9001:2009

DIMENSIONS AND WEIGHTS OF TECHNOLOGY 150 kW



1. Water outlet DN80/PN6
2. Water inlet DN80/PN6
3. In/out water valve 3/4" of burning chamber
4. In/out water valve 3/4" of heat exchanger
5. Chimney outlet avg. 220 mm
* Option for limited spaces



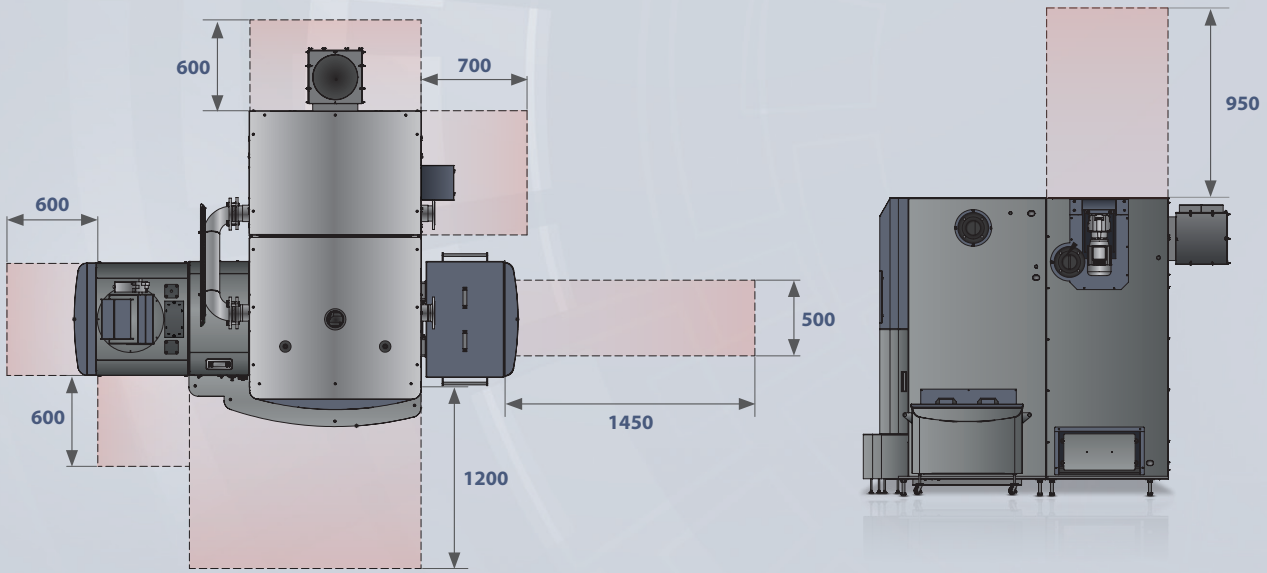
Left sided

Right sided

A	B	C	D	E	F	G	H	CH
2825	1750	2160	580	1820	1345	1570	715	600

WEIGHTS		
Burning chamber 150 kW	1 210 kg	Total weight
Exchanger 150	1 050 kg	2 260 kg

SERVICE ZONES OF TECHNOLOGY 150 kW



AUTOMATIC BIOMASS BOILER

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TECHNICAL SPECIFICATIONS 150 kW

AUTOMATIC BIOMASS BOILER SMART 150 kW		Wood pellets		Wood chips	
		Rated	Minimum	Rated	Minimum
Measured values					
Rated heat capacity	kW	150	150	150	150
Combustion product temperature	°C	116,1	72,4	96,6	63,1
Fuel consumption	kg/hour	36,30	9,78	37,18	9,45
Input water temperature	°C	60,2	67,1	60,3	62,4
Outlet water temperature	°C	80,5	85,2	78,8	79,2
Cooling water temperature	°C	9,6	11,1	9,6	11,0
Cooling water flow rate	m^3/hod	6,733	2,033	7,080	1,950
Draught behind boiler	Pa	125,0	35,0	125,0	35,0
Ambient temperature	°C	24,0	26,3	24,2	22,6
Relative air humidity	%	45,3	44,7	38,6	37,2
Barometric pressure	kPa	99,23	99,24	99,10	99,20
Flue gas analysis					
Oxygen O_2	%	8,12	12,66	8,08	11,40
Carbon dioxide CO_2	%	11,37	7,28	11,61	8,70
Carbon monoxide CO	ppm	46	175	100	146
Higher hydrocarbons OGC	ppm	4	2	3	5
Nitrogen dioxides Nox	ppm	81	47	83	55
Dust	mg/m^3	28	17	52	41
O2 = 10 %					
Carbon monoxide CO	mg/m^3	49	289	106	209
Higher hydrocarbons OGC	mg/m^3	2	1	1	3
Nitrogen dioxides Nox	mg/m^3	143	126	144	130
Dust	mg/m^3	24	23	44	47
Auxiliary combustion values (solid fuels)					
Mass flow rate gases	kg/sec	0,109	0,044	0,099	0,033
Stoichiometric oxygen value	m^3/kg	0,957	0,957	0,832	0,832
Stoichiometric air value	m^3/kg	4,559	4,556	3,963	3,960
Stoichiometric volume of dry combustion products	m^3/kg	4,448	4,445	3,884	3,881
Stoichiometric air multiple		1,61	2,48	1,61	2,16
Volume of dry combustion products, actual	m^3/kg	7,436	11,573	6,474	8,622
Volume of H_2O in the combustion air	m^3/kg	0,102	0,177	0,076	0,089
Volume of H_2O in the combustion produts	m^3/kg	0,956	1,032	0,922	0,935
Maximum volume CO_2	%	19,01	19,01	19,37	19,37
Calculated values - heat overview					
Loss of sensible heat of combustion products (chimney)	%	6,4	4,7	4,8	3,5
Loss of gas underburning	%	0,0	0,2	0,1	0,1
Loss of mechanical underburning	%	0,1	0,1	0,3	0,3
Loss of heat transfer into the environment	%	0,8	1,1	0,8	2,1
Total loss	%	7,3	6,1	6,0	6,0
Efficiency – indirect method	%	92,7	93,9	94,0	94,0
Heat input	kW	167,0	45,0	158,9	40,4
Heat capacity	kW	159,2	43,0	152,0	38,4
Uncertainty of determining heat capacity	%+/-	6,7	1,8	6,4	1,6
Efficiency – direct method	**%**	**95,3**	**95,6**	**95,6**	**95,1**
Capacity / rated output	%	106,1	28,7	101,3	25,6

*Boilers can be operated at 90 °C only when special conditions are met

CERTIFIED OPERATING VALUES 150 kW

SMART BOILER OPERATING DATA		
Technical data of the boiler		
Marking		150
Nominal power Pn	kW	150
Partial load (power) Pp	kW	40
Boiler efficiency at Pn	%	>95
Boiler class		5
Water		
Water volume	l	380
Diameter of water connection	"	3
Diameter of water connection	DN	80
Hydraulic-pressure drop of the boiler at the temperature fall 20°	mbar	65
Boiler temperature	°C	60-90*
Minimal temperature of returnable water	°C	55
Maximal operational pressure	bar	3,5
Test pressure	bar	6,5
Temperature of furnace	**°C**	**900-1100**
Pressure of furmace	mbar	-0,04
Required draught of the chimney	mbar	0,2
Requirement for the forced draught		Yes
Combustion temperature at Pn	°C	96,6
Combustion temperature at Pp	°C	63,1
Diameter of flue gas duct	mm	220
Diameter of chimney	mm	250
Fuel clasification according to norm EN 14961		
Wood pellets - C1	Tested fuel	D6, M10, A1,5, DU90,0
Wood chips - B1		P45, M30, A3.0
Electrical installation		
Electrical connection		3+N+PE 50Hz 230/400V TN-C-S
Conveyor engine	W	550
Feeding auger engine	W	550
Exchanger cleaning engine (s)	W	550
Ash-removing engine	W	550
Fan of primary air	W	66
Fan of secondary air 1	W	66
Fan of secondary air 2	W	66
Chimney exhaust fan	W	300
Electrical ignition	W	1600
Separation flap valve	W	6,5
Total	**W**	**4304,5**

▪ Measured ▪ Interpolace is in complience with EN303.5 coll. 5.3.1