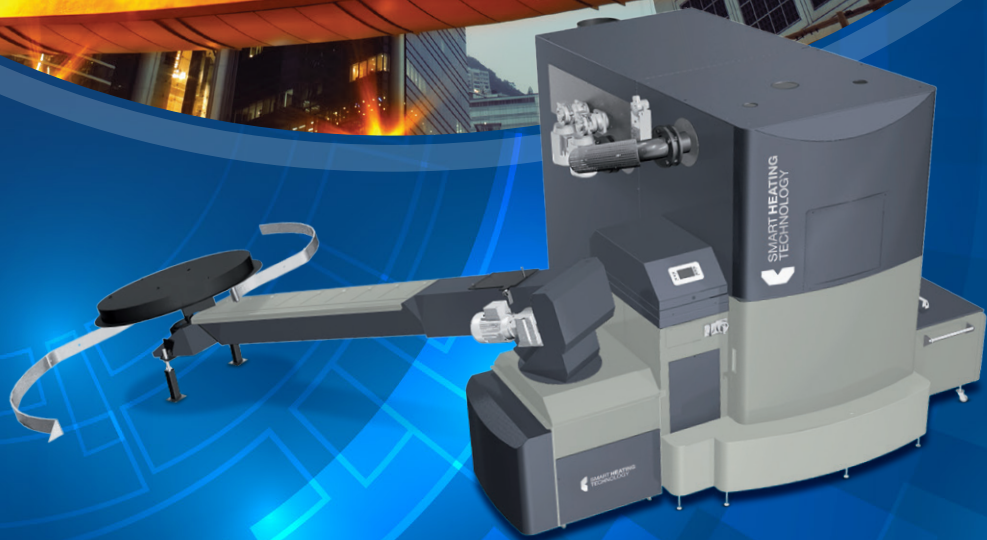




# SMART HEATING TECHNOLOGY

Purity to Nature  
Savings to Clients  
Comfort to Users



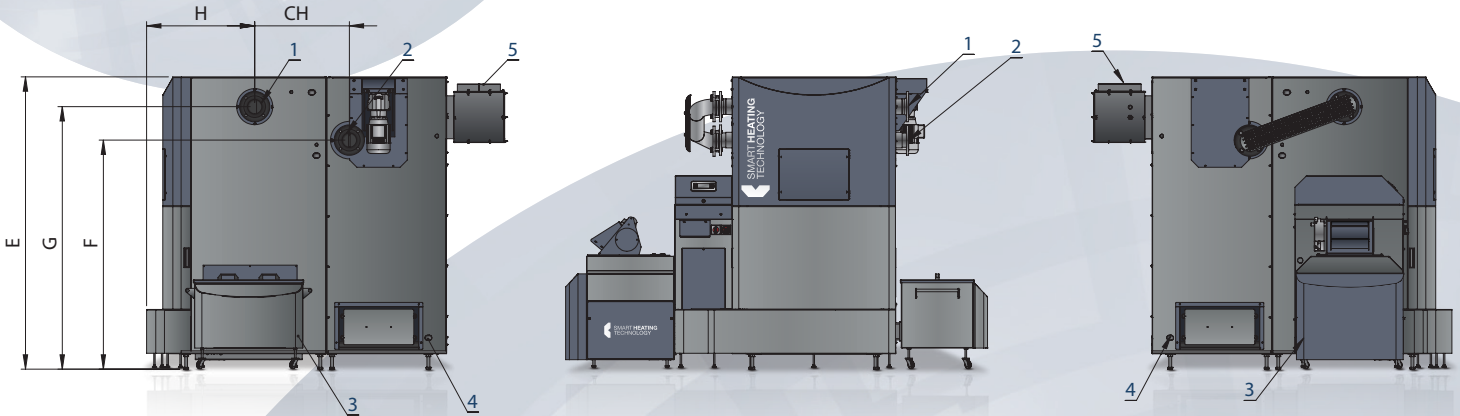
AUTOMATIC BIOMASS BOILER

## SMART 220 kW

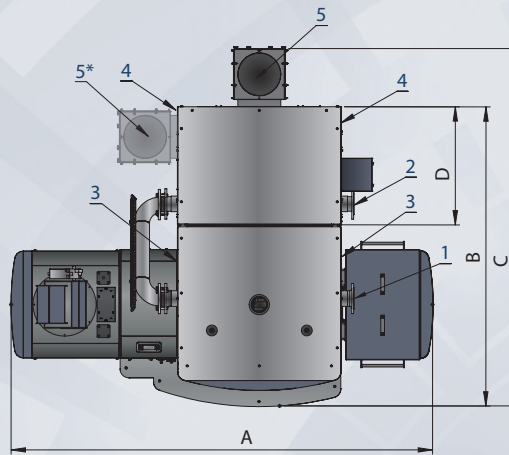
- Fully automatic, ecologic boiler with excellent features
- Multiple fuel possibility
- Output modulation 30–100 %
- Vibrating Burner Plate Option
- Low Maintenance & Service requirements
- Cascade installation solutions
- Mobile container solutions
- Technical solution flexibility
- Economical and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

# SMART 220 kW

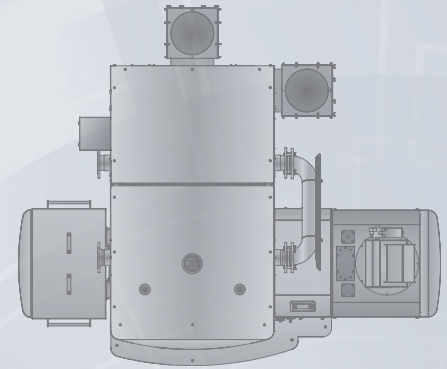
DIMENSIONS AND WEIGHTS  
OF TECHNOLOGY 220 kW



- ❶ Water outlet DN80/PN6
- ❷ Water inlet DN80/PN6
- ❸ In/out water valve 3/4" of burning chamber
- ❹ In/out water valve 3/4" of heat exchanger
- ❺ Chimney outlet avg. 220 mm
- \* Option for limited spaces



Left sided

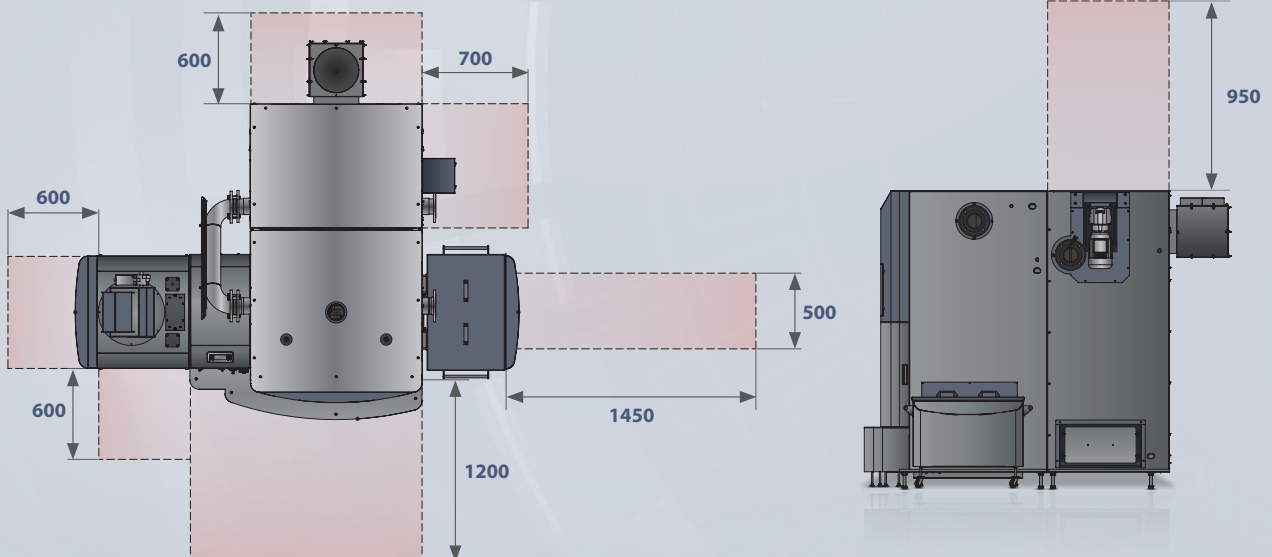


Right sided

A	B	C	D	E	F	G	H	CH
2825	1990	2400	820	1820	1345	1570	715	600

WEIGHTS		
Burning chamber 220 kW	1 210 kg	Total weight
Exchanger 220	1 200 kg	2 410 kg

## SERVICE ZONES OF TECHNOLOGY 220 kW





# AUTOMATIC BIOMASS BOILER

## SMART 220 kW



ČSN-EN 303.5/2013

ISO 9001:2009

### TECHNICAL SPECIFICATIONS 220 kW

AUTOMATIC BIOMASS BOILER SMART 220 kW		Wood pellets		Wood chips	
		Rated	Minimum	Rated	Minimum
<b>Measured values</b>					
Rated heat capacity	kW	199	199	199	199
Combustion product temperature	°C	96,1	73,1	104,9	72,4
Fuel consumption	kg/hour	42,60	12,48	50,60	14,50
Input water temperature	°C	57,8	67,2	55,0	71,3
Outlet water temperature	°C	73,0	82,6	77,1	79,0
Cooling water temperature	°C	11,1	7,8	10,6	11,5
Cooling water flow rate	m <sup>3</sup> /hod	2,695	0,650	2,673	0,755
Draught behind boiler	Pa	130,0	30,0	130,0	30,0
Ambient temperature	°C	25,2	24,9	24,1	26,2
Relative air humidity	%	42,3	41,1	41,0	40,0
Barometric pressure	kPa	98,92	98,95	99,07	99,07
<b>Flue gas analysis</b>					
Oxygen O <sub>2</sub>	%	8,02	12,71	8,02	12,71
Carbon dioxide CO <sub>2</sub>	%	11,79	7,53	11,79	7,53
Carbon monoxide CO	ppm	58	181	58	181
Higher hydrocarbons OGC	ppm	7	4	7	4
Nitrogen dioxides Nox	ppm	65	38	65	38
Dust	mg/m <sup>3</sup>	29	18	51	44
<b>O<sub>2</sub> = 10 %</b>					
Carbon monoxide CO	mg/m <sup>3</sup>	62	301	112	244
Higher hydrocarbons OGC	mg/m <sup>3</sup>	10	8	2	4
Nitrogen dioxides Nox	mg/m <sup>3</sup>	113	102	151	120
Dust	mg/m <sup>3</sup>	25	25	44	51
<b>Auxiliary combustion values (solid fuels)</b>					
Mass flow rate gases	kg/sec	0,155	0,053	0,148	0,066
Stoichiometric oxygen value	m <sup>3</sup> /kg	0,949	0,948	0,848	0,848
Stoichiometric air value	m <sup>3</sup> /kg	4,520	4,512	4,037	4,036
Stoichiometric volume of dry combustion products	m <sup>3</sup> /kg	4,445	4,438	3,949	3,948
Stoichiometric air multiple		1,61	2,51	1,60	2,50
Volume of dry combustion products, actual	m <sup>3</sup> /kg	7,411	11,553	6,435	10,048
Volume of H <sub>2</sub> O in the combustion air	m <sup>3</sup> /kg	0,101	0,150	0,081	0,140
Volume of H <sub>2</sub> O in the combustion products	m <sup>3</sup> /kg	0,867	0,916	0,956	1,015
Maximum volume CO <sub>2</sub>	%	19,60	19,66	19,22	19,22
<b>Calculated values - heat overview</b>					
Loss of sensible heat of combustion products (chimney)	%	4,5	4,5	5,3	4,5
Loss of gas underburning	%	0,0	0,2	0,0	0,2
Loss of mechanical underburning	%	0,1	0,2	0,0	0,1
Loss of heat transfer into the environment	%	0,6	0,9	0,6	0,7
Total loss	%	5,2	5,8	6,0	5,4
Efficiency – indirect method	%	94,8	94,2	94,0	94,6
Heat input	kW	203,3	59,5	216,8	62,1
Heat capacity	kW	193,7	56,6	206,2	59,3
Uncertainty of determining heat capacity	%+/-	8,1	2,4	8,7	2,5
<b>Efficiency – direct method</b>	%	<b>95,3</b>	<b>95,1</b>	<b>95,1</b>	<b>95,5</b>
Capacity / rated output	%	97,3	28,4	103,6	29,8

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

### CERTIFIED OPERATING VALUES 220 kW

SMART BOILER OPERATING DATA		
<b>Technical data of the boiler</b>		
Marking		220
Nominal power P <sub>n</sub>	kW	220
Partial load (power) P <sub>p</sub>	kW	55
Boiler efficiency at P <sub>n</sub>	%	>95
Boiler class		5
<b>Water</b>		
Water volume	l	460
Diameter of water connection	"	3
Diameter of water connection	DN	80
Hydraulic-pressure drop of the boiler at the temperature fall 20°	mbar	80
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 furnace	mbar	-0,04
Required draught of the chimney	mbar	0,2
Requirement for the forced draught		Yes
Combustion temperature at P <sub>n</sub>	°C	98
Combustion temperature at P <sub>p</sub>	°C	63,1
Diameter of flue gas duct	mm	220
Diameter of chimney	mm	250
<b>Fuel classification according to norm EN 14961</b>		
Wood pellets - C1	Tested fuel	D6, M10, A1,5, DU90,0
Wood chips - B1		P45, M30, A3.0
<b>Electrical installation</b>		
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
<b>Total</b>	<b>W</b>	<b>4304,5</b>

■ Measured ■ Interpolace is in compliance with EN303.5 coll. 5.3.1