SMART HEATING TECHNOLOGY

Smart Heating Technology Ltd.

U Statku 653/24, 717 00 Ostrava-Bartovice

Czech Republic

SMART HEATING TECHNOLOGY

AUTOMATIC BIOMASS BOILERS

Smart 150 – 500 – 1500 kW

CE

STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV


CERTIFICATE
of
Quality Management System
C - 270/2013 - QMS - 1

SMART HEATING TECHNOLOGY

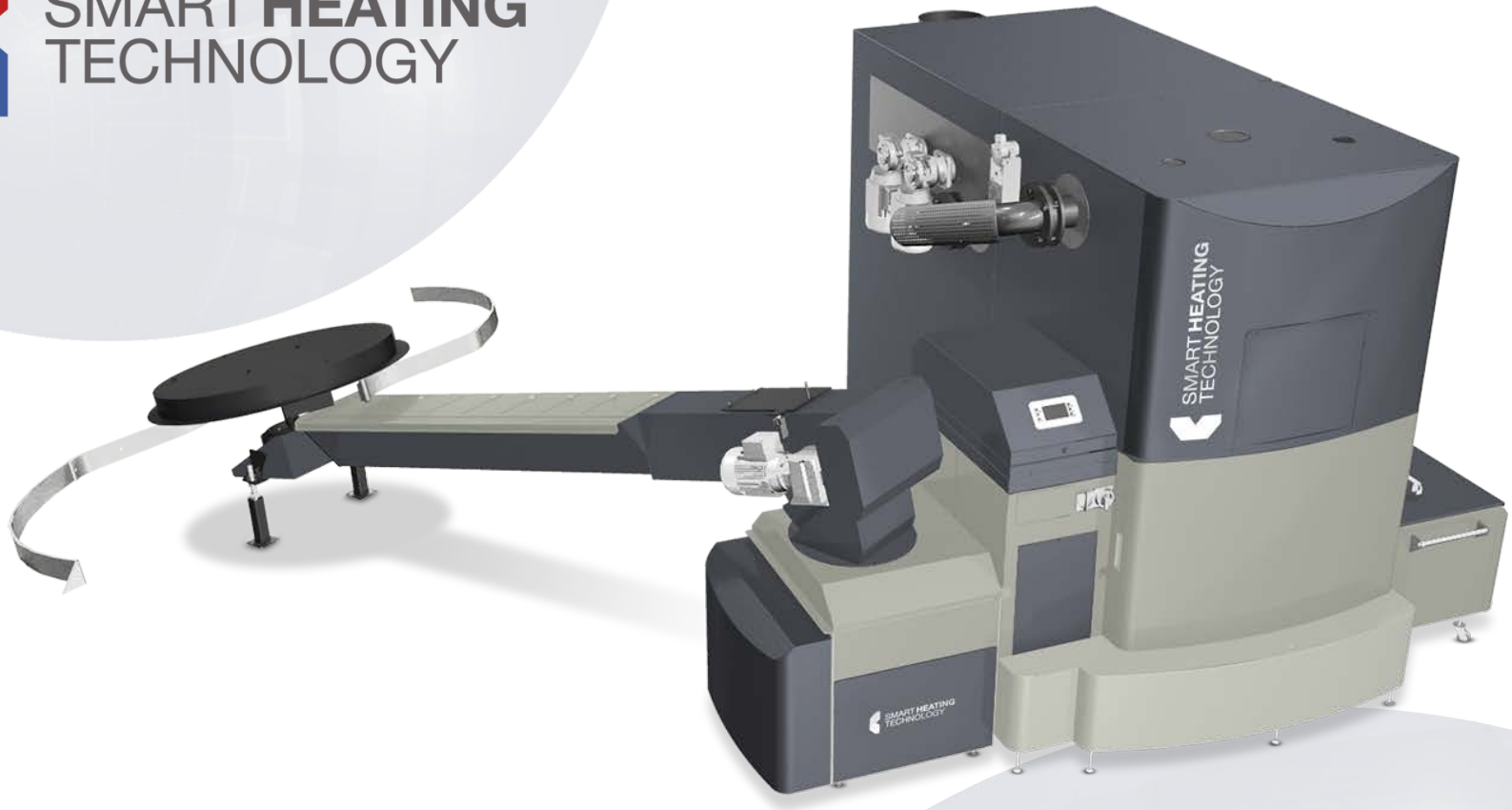
SMART INDUSTRIAL PARK

Ostrava-Bartovice 18 000 m²

STC
SMART TRADING COMPANY

Smart Painting

SMART **HEATING**
TECHNOLOGY



Automatic Boilers SMART 150 – 500 kW

Fully automatic boilers, with economical and ecological operation

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Efficiency 96 %, output modulation 30 – 100 %, low CO emission levels

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Smart Second Boiler Colour Options:

Tuscan Brown

Suede

Spring Green

Solar

Mango

Lime

Midnight

Sandstone

Light Grey

Light Blue

Lemon

Indigo

Bright Red

Aquamarie

Black

Deep Orange

Evergreen

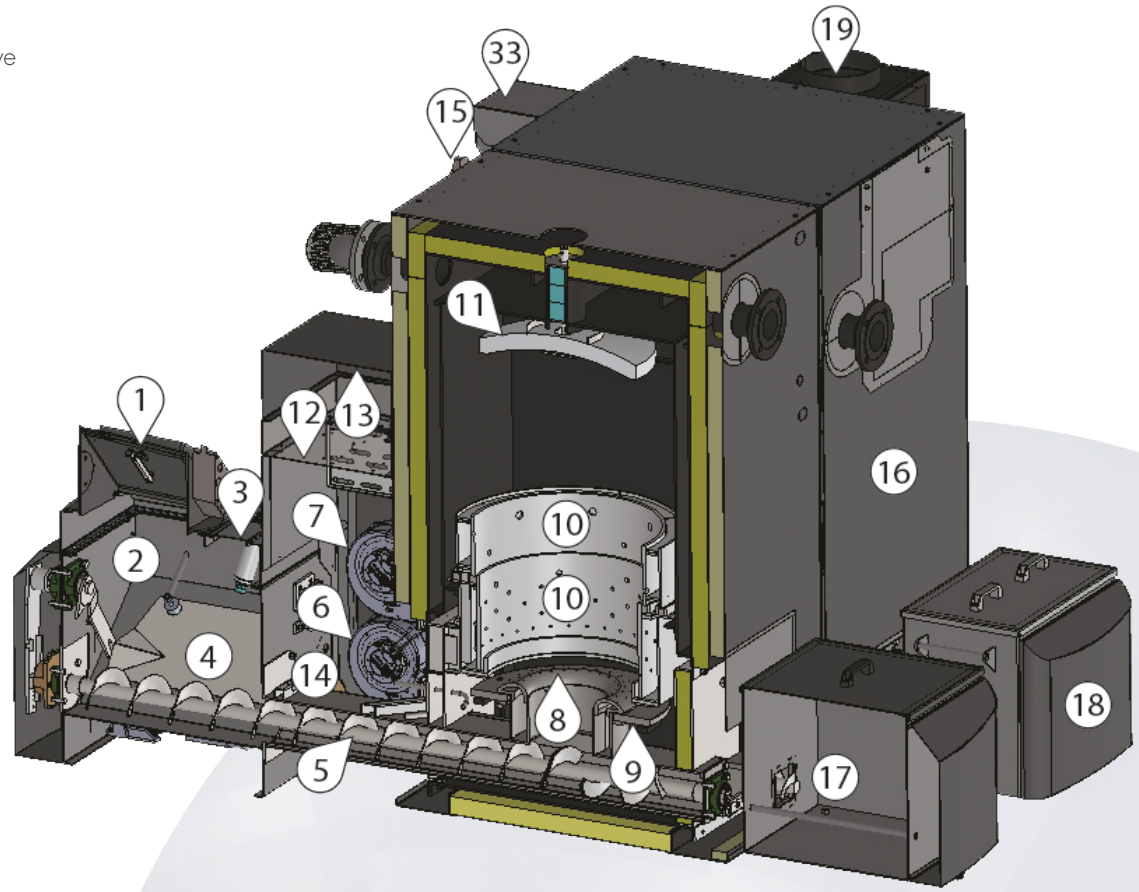
Crimson

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 300 – 500 kW

Inside view A

1. Channel And Operational Bin Separation Valve
2. Operational Fuel Bin
3. Fuel Level Sensor
4. Moving Floor Mechanism
5. Feeding Screw
6. Primary Fan
7. Secondary Fans
8. Primary Burner Ring
9. Grating/Vibrating Wheel
10. Upper/Lower Burner Rings
11. Refractory Ceramics
12. Control Unit Siemens
13. Control Unit Cover with Display
14. Accessories
    - Ignition gun
    - Emergency Extinguishing Mechanism
    - Safety Temperature Sensors
15. Exchanger Valve Servo-Drive
16. Heat Exchanger With Turbulators
17. Combustion Chamber Ash Bin
18. Exchanger Ash Bin – Option
19. Chimney Extension Box

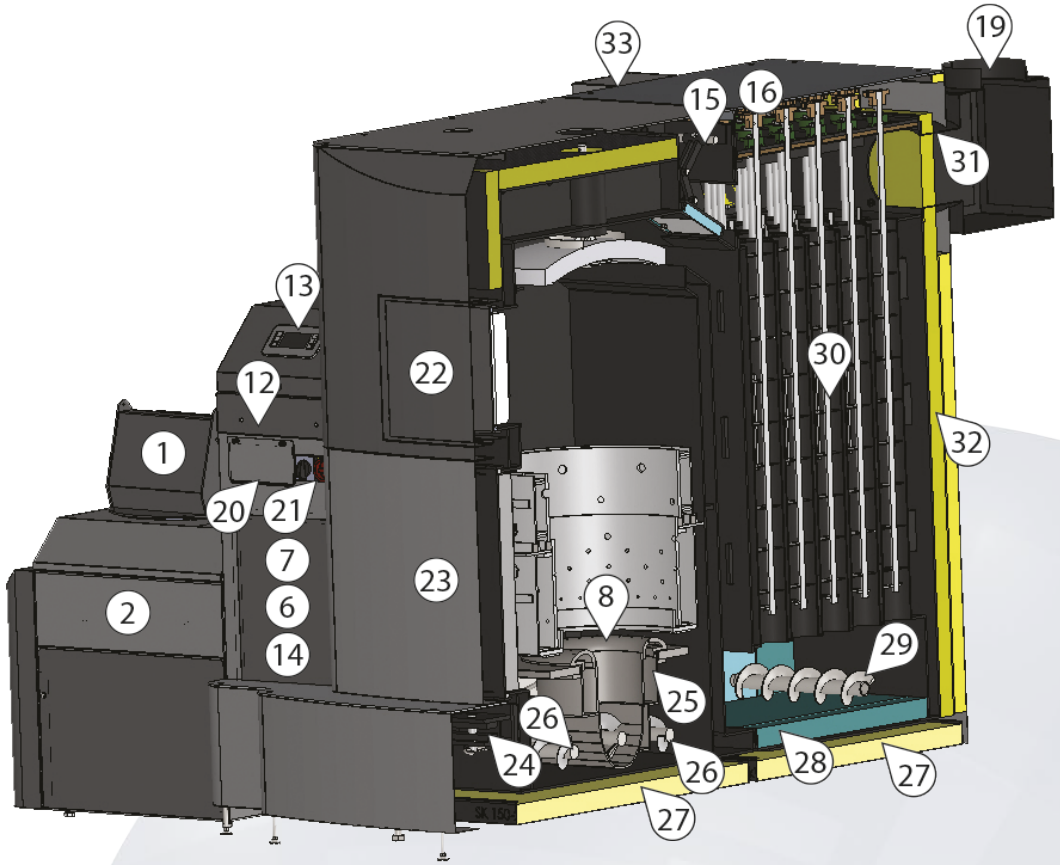


SMART HEATING TECHNOLOGY

Automatic Boilers SMART 300 – 500 kW

Inside view B

20. Fuses
21. Main Switch
22. Small Service Doors
23. Big Service Doors
24. Grating/Vibrating Mechanism
25. Primary Air Channel
26. Ash Screws
27. Bottom Insulation
28. Bottom Hi-Temp Exchanger Insulation
29. Exchanger De-ashing – Option
30. Turbulators
31. Lambda Sensor
32. Dual Boiler Insulation
33. Turbulators Drive Motor



SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Fuel

Wood Chips

Wood Pellets

Briquettes

Shavings

Saw-dust

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Average Fuel Consumption

FUEL CONSUMPTION (time t)	BOILER TYPE	FUEL					
		WOOD PELLETS (650 kg/m^3)		SAW-DUST (130 kg/m^3)		WOOD CHIPS (230 kg/m^3)	
		kg	m^3	kg	m^3	kg	m^3
Day	150 kW	257,1	0,39	452,77	3,48	427,15	1,86
Year	150 kW	54 000	83	95 081,70	731,4	89 700	390
Day	180 kW	308,5	0,47	543,35	4,18	512,6	2,23
Year	180 kW	64 800	99,6	114 103,5	887,72	107 640	468
Day	220 kW	377,1	0,57	664,09	5,1	626,5	2,72
Year	220 kW	79 200	121,73	139 458,9	1 072,76	131 560	572
Day	250 kW	428,5	0,65	754,6	5,8	711,9	3,1
Year	250 kW	90 000	138,33	158 466	1 218,97	149 500	650
Day	300 kW	514,2	0,78	905,56	6,97	854,3	3,71
Year	300 kW	108 000	166	190 168,6	1 462,80	179 400	780
Day	350 kW	600	0,91	1 056,46	8,13	996,66	4,33
Year	350 kW	126 000	193,67	221 856,6	1 706,60	209 300	910
Day	400 kW	685,6	1,04	1 102,40	8,48	1 040	4,95
Year	400 kW	144 000	221,33	231 504	1 780,80	239 200	1 040
Day	450 kW	771,3	1,17	1 358,28	10,45	1 281,40	5,57
Year	450 kW	162 000	249	285 239	2 194,14	269 100	1 170
Day	500 kW	857,1	1,3	1 509,23	11,61	1 423,80	6,2
Year	500 kW	180 000	276,67	316 938	2 438	299 000	1 300

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Chimney requirements

Recommended chimney dimensions: **SMART 150–250 kW**

250 mm

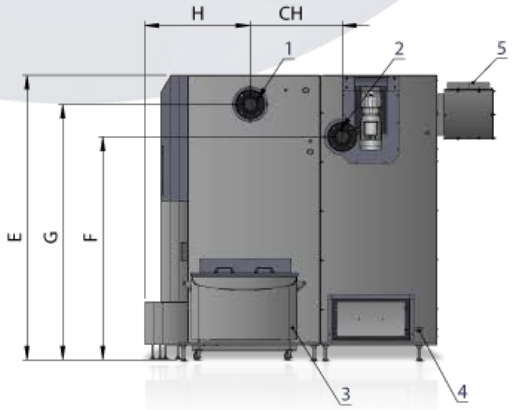
Recommended chimney dimensions: **SMART 300–500 kW**

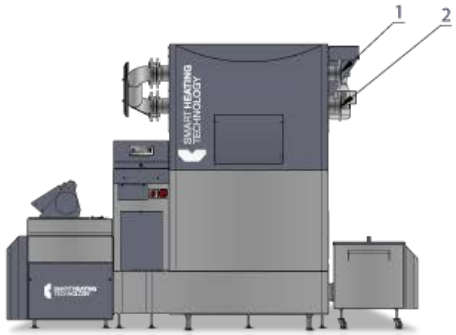
350 mm

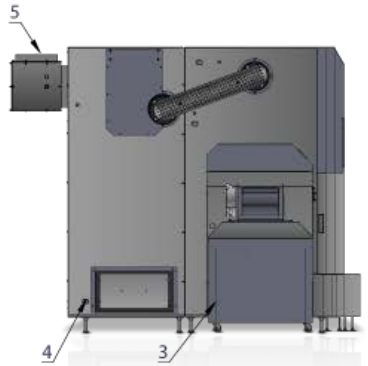
SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 250 kW

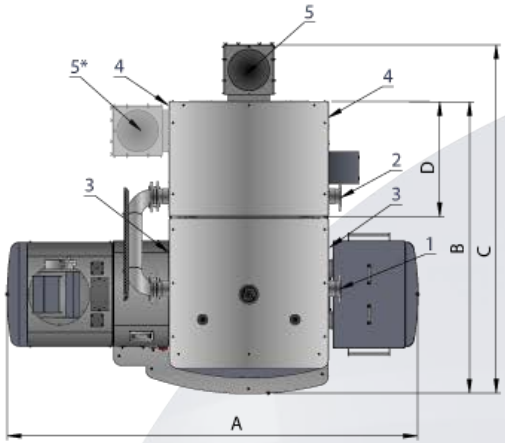
Dimensions







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



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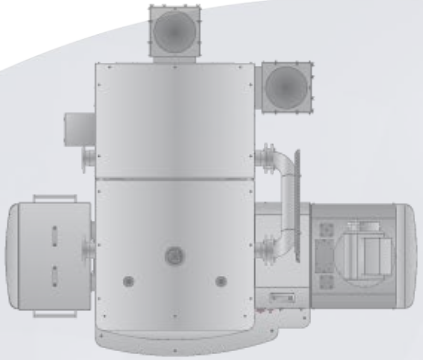

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SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 250 kW

Dimensions and Weight

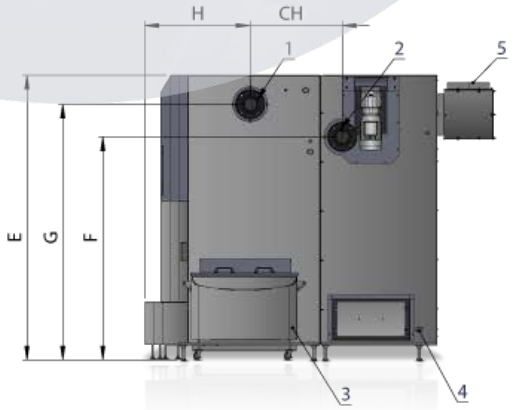
	150	180	200	250
A	2825	2825	2825	2825
B	1750	1870	1990	2110
C	2160	2280	2400	2520
D	580	700	820	940
E	1820	1820	1820	1820
F	1345	1345	1345	1345
G	1570	1570	1570	1570
H	715	715	715	715
CH	600	600	600	600

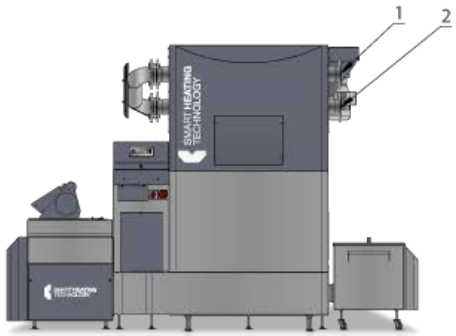
WEIGHTS		
Burning chamber 150 – 250 kW	1 210 kg	Total weight
Exchanger 150	1 050 kg	2 260 kg
Exchanger 180	1 150 kg	2 360 kg
Exchanger 200	1 200 kg	2 410 kg
Exchanger 250	1 300 kg	2 510 kg

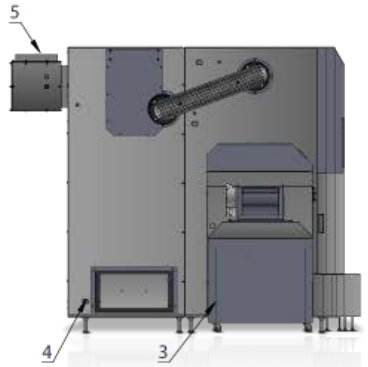
SMART HEATING TECHNOLOGY

Automatic Boilers SMART 300 – 500 kW

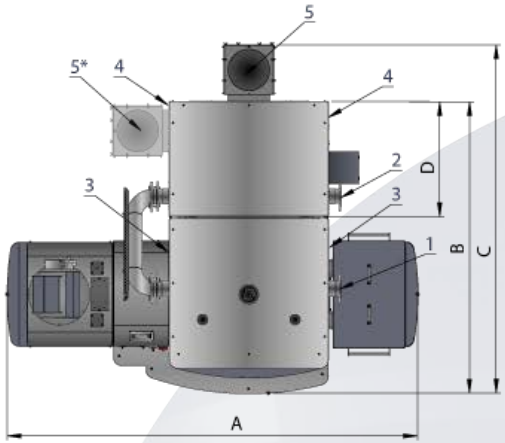
Dimensions







1. Water outlet DN100/PN6
2. Water inlet DN100/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. 300 mm
- * Option for limited spaces



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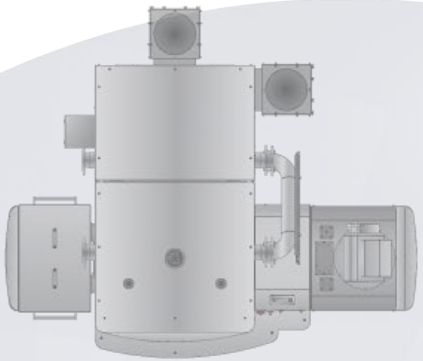

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SMART HEATING TECHNOLOGY

Automatic Boilers SMART 300 – 500 kW

Dimensions and Weight

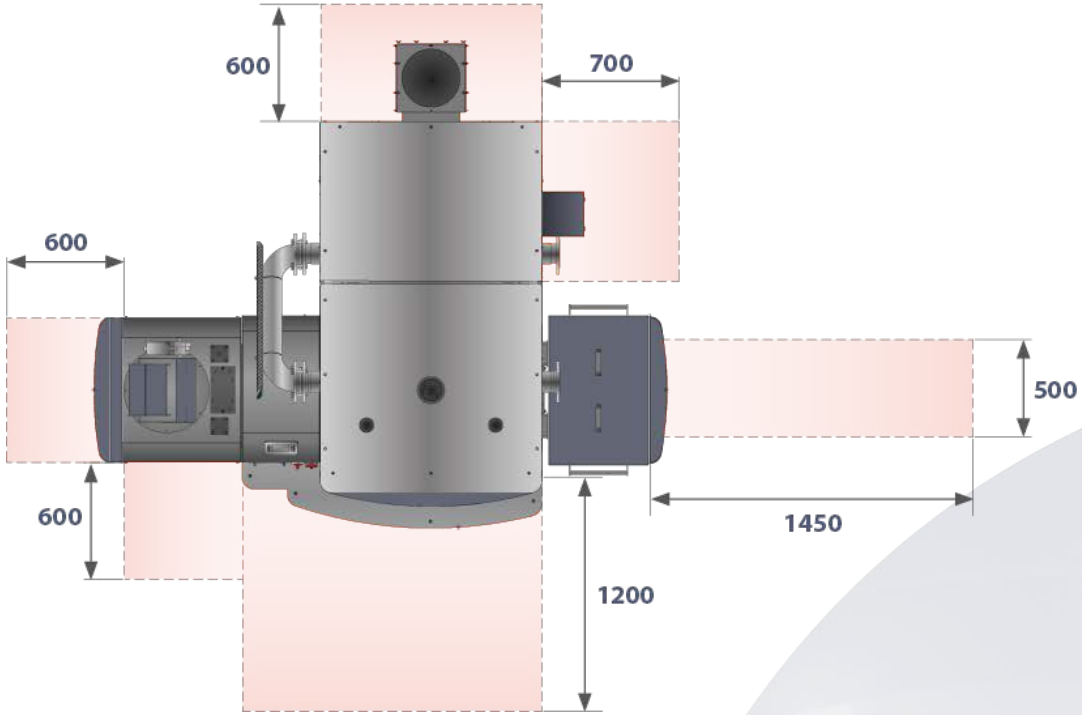
	300	350	400	450	500
A	2940	2940	2940	2940	2940
B	2080	2200	2320	2440	2560
C	2480	2600	2720	2840	2960
D	820	940	1060	1180	1300
E	1995	1995	1995	1995	1995
F	1560	1560	1560	1560	1560
G	1790	1790	1790	1790	1790
H	750	750	750	750	750
CH	655	655	655	655	655

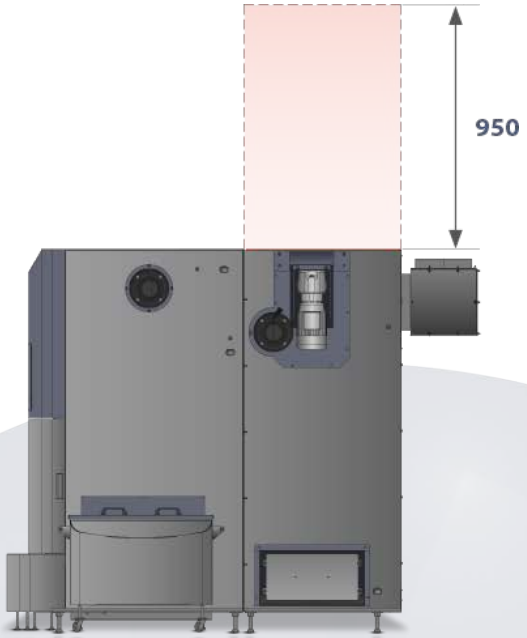
WEIGHTS		
Burning chamber 300 – 500 kW	1 550 kg	Total weight
Exchanger 300	1 500 kg	3 050 kg
Exchanger 350	1 600 kg	3 150 kg
Exchanger 400	1 700 kg	3 250 kg
Exchanger 450	1 800 kg	3 350 kg
Exchanger 500	1 950 kg	3 500 kg

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 250 kW

Service Zones

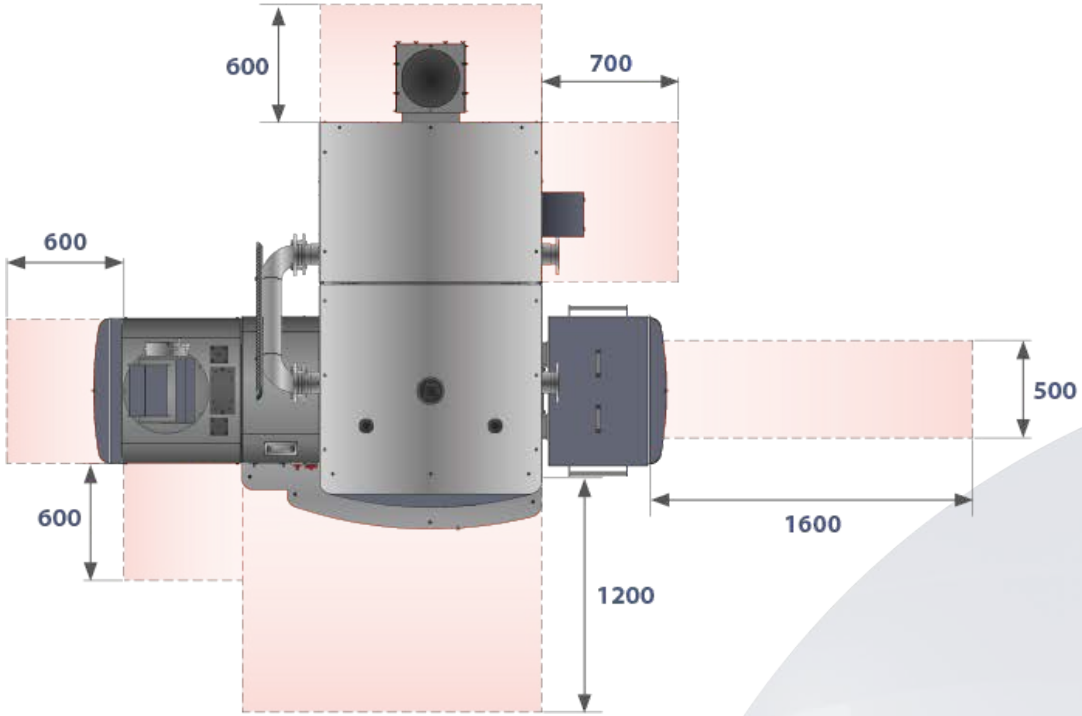


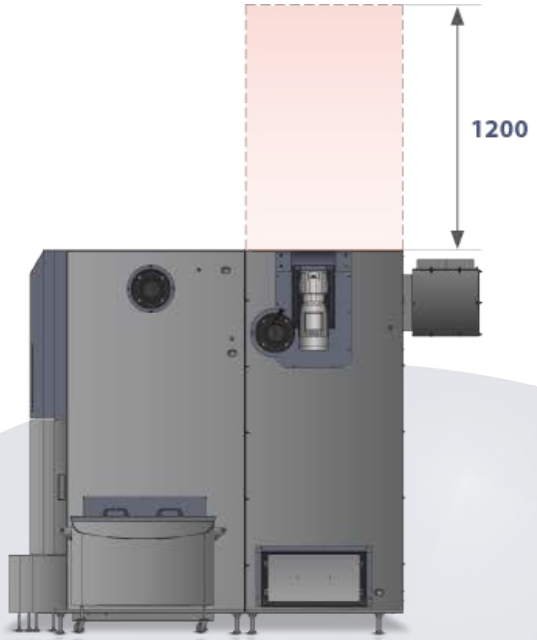


SMART HEATING TECHNOLOGY

Automatic Boilers SMART 300 – 500 kW

Service Zones





SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Technical Parameters

SMART BOILERS OPERATING DATA											
Technical data of the boiler											
Marking		150	180	200	220	250	300	350	400	450	500
Nominal power Pn	kW	150	180	199	220	250	300	350	400	450	500
Partial load (power) Pp	kW	40	45	50	55	65	75	90	100	115	140
Boiler efficiency at Pn	%	>95	>95	>95	>95	>95	>95	>95	>95	>95	>95
Boiler class		5	5	5	5	5	5	5	5	5	5
Water											
Water volume	l	380	420	460	460	500	690	740	790	850	900
Diameter of water connection	"	3	3	3	3	3	4	4	4	4	4
Diameter of water connection	DN	80	80	80	80	80	100	100	100	100	100
Hydraulic-pressure drop of the boiler at the temperature fall 20°	mbar	65	73	80	80	87	95	102	110	122	130
Boiler temperature	°C	60-90*	60-90*	60-90*	60-90*	60-90*	60-90*	60-90*	60-90*	60-90*	60-90*
Minimal temperature of returnable water	°C	55	55	55	55	55	55	55	55	55	55
Maximal operational pressure	bar	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5
Test pressure	bar	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5
Temperature of furnace	°C	900-1100									
Pressure of furmace	mbar	-0,04	-0,04	-0,04	-0,04	-0,04	-0,04	-0,04	-0,04	-0,04	-0,04
Required draught of the chimney	mbar	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Requirement for the forced draught		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Combustion temperature at Pn	°C	96,6	97,2	104,9	98	96,6	99,6	99,3	98,9	98,2	97,2
Combustion temperature at Pp	°C	63,1	63,1	72,4	63,1	63,1	63,1	62,9	62,7	62,4	62,2
Diameter of flue gas duct	mm	220	220	220	220	220	300	300	300	300	300
Diameter of chimney	mm	250	250	250	250	250	350	350	350	350	350

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 200 kW

Emissions Parameters

		SMART 150				SMART 180				SMART 200			
		Wood pellets		Wood chips		Wood pellets		Wood chips		Wood pellets		Wood chips	
		Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum
Measured values													
Rated heat capacity	kW	150	150	150	150	180	180	180	180	199	199	199	199
Combustion product temperature	°C	116,1	72,4	96,6	63,1	111,4	70,8	97,2	63,1	96,1	73,1	104,9	72,4
Fuel consumption	kg/hour	36,30	9,78	37,18	9,45	42,50	11,10	44,80	11,30	42,60	12,48	50,60	14,50
Input water temperature	°C	60,2	67,1	60,3	62,4	59,5	65,7	60,0	61,4	57,8	67,2	55,0	71,3
Outlet water temperature	°C	80,5	85,2	78,8	79,2	79,1	83,3	78,0	78,4	73,0	82,6	77,1	79,0
Cooling water temperature	°C	9,6	11,1	9,6	11,0	9,6	11,1	9,6	11,0	11,1	7,8	10,6	11,5
Cooling water flow rate	m^3/hod	6,733	2,033	7,080	1,950	8,433	2,401	9,034	2,304	2,695	0,650	2,673	0,755
Draught behind boiler	Pa	125,0	35,0	125,0	35,0	126,0	33,0	126,0	33,0	130,0	30,0	130,0	30,0
Ambient temperature	°C	24,0	26,3	24,2	22,6	24,0	25,3	25,0	23,0	25,2	24,9	24,1	26,2
Relative air humidity	%	45,3	44,7	38,6	37,2	45,0	44,5	40,0	39,0	42,3	41,1	41,0	40,0
Barometric pressure	kPa	99,23	99,24	99,10	99,20	99,00	99,25	99,00	99,22	98,92	98,95	99,07	99,07
Flue gas analysis													
Oxygen O_2	%	8,12	12,66	8,08	11,40	7,92	12,39	7,89	11,46	8,02	12,71	8,02	12,71
Carbon dioxide CO_2	%	11,37	7,28	11,61	8,70	11,43	7,65	11,73	8,65	11,79	7,53	11,79	7,53
Carbon monoxide CO	ppm	46	175	100	146	49	171	93	153	58	181	58	181
Higher hydrocarbons OGC	ppm	4	2	3	5	4	3	3	5	7	4	7	4
Nitrogen dioxides Nox	ppm	81	47	83	55	81	49	84	54	65	38	65	38
Dust	mg/m^3	28	17	52	41	29	44	47	41	29	18	51	44
02 = 10%													
Carbon monoxide CO	mg/m^3	49	289	106	209	51	275	97	220	62	301	112	244
Higher hydrocarbons OGC	mg/m^3	2	1	1	3	2	2	1	3	10	8	2	4
Nitrogen dioxides Nox	mg/m^3	143	126	144	130	140	127	144	127	113	102	151	120
Dust	mg/m^3	24	23	44	47	25	25	39	47	25	25	44	51

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 250 – 350 kW

Emissions Parameters

		SMART 250				SMART 300				SMART 350			
		Wood pellets		Wood chips		Wood pellets		Wood chips		Wood pellets		Wood chips	
		Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum
Measured values													
Rated heat capacity	kW	250	250	250	250	300	300	300	300	350	350	350	350
Combustion product temperature	°C	100,4	66,9	98,6	63,1	92,5	64,2	99,6	63,1	93,8	63,1	99,3	62,9
Fuel consumption	kg/hour	56,90	14,20	62,70	15,60	67,15	16,42	75,50	18,70	78,90	18,50	86,90	20,80
Input water temperature	°C	57,9	62,4	59,4	59,1	56,7	60,0	59,0	57,4	58,4	60,6	59,3	57,7
Outlet water temperature	°C	75,7	78,9	76,1	76,4	73,3	75,8	74,7	75,0	75,5	76,1	75,0	74,5
Cooling water temperature	°C	9,6	11,0	9,6	11,0	9,6	11	9,6	11,0	9,5	10,7	9,6	11,0
Cooling water flow rate	m^3/hod	12,400	3,300	13,600	3,130	15,234	3,873	16,850	3,720	17,272	4,492	19,438	4,428
Draught behind boiler	Pa	128,0	28,0	128,0	28,0	130,0	25,0	130,0	25,0	151,0	25,0	150,0	25,0
Ambient temperature	°C	24,3	23,1	25,7	23,3	24,4	21,5	26,4	23,6	26,0	23,0	27,0	24,0
Relative air humidity	%	43,7	44,0	44,1	43,9	42,9	43,7	46,9	47,2	37,0	38,0	41,0	41,0
Barometric pressure	kPa	99,21	99,30	99,10	99,30	99,20	99,30	99,10	99,30	99,20	99,30	99,07	99,22
Flue gas analysis													
Oxygen O_2	%	7,45	11,77	7,43	11,59	7,12	11,32	7,11	11,68	7,59	10,37	7,17	11,20
Carbon dioxide CO_2	%	11,56	8,51	12,10	8,53	11,66	9,13	12,35	8,44	11,46	9,61	12,15	8,88
Carbon monoxide CO	ppm	55	162	75	169	59	155	63	180	82	133	101	173
Higher hydrocarbons OGC	ppm	3	5	4	6	2	6	4	7	6	5	3	6
Nitrogen dioxides Nox	ppm	80	52	86	50	80	55	87	48	74	61	93	56
Dust	mg/m^3	33	26	34	41	35	31	25	41	30	30	45	54
02 = 10%													
Carbon monoxide CO	mg/m^3	55	243	77	246	58	220	63	265	87	182	101	246
Higher hydrocarbons OGC	mg/m^3	1	3	2	4	1	4	2	4	3	3	2	4
Nitrogen dioxides Nox	mg/m^3	134	128	143	121	130	129	142	116	124	129	153	128
Dust	mg/m^3	26	31	28	48	27	35	20	48	24	32	25	48

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 400 – 500 kW

Emissions Parameters

		SMART 400				SMART 450				SMART 500			
		Wood pellets		Wood chips		Wood pellets		Wood chips		Wood pellets		Wood chips	
		Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum	Rated	Minimum
Measured values													
Rated heat capacity	kW	400	400	400	400	450	450	450	450	500	500	500	500
Combustion product temperature	°C	95,1	62,0	98,9	62,7	96,3	60,9	98,6	62,4	97,6	59,8	98,2	62,2
Fuel consumption	kg/hour	90,70	20,60	98,30	22,90	102,48	22,74	109,60	25,00	114,26	24,85	121,00	27,12
Input water temperature	°C	60,2	61,1	59,7	57,9	61,9	61,7	60,0	58,2	63,6	62,2	60,3	58,4
Outlet water temperature	°C	77,8	76,5	75,4	74,1	80,0	76,8	75,7	73,6	82,2	77,1	76,0	73,1
Cooling water temperature	°C	9,4	10,4	9,6	11,0	9,3	10,0	9,6	11,0	9,2	9,7	9,6	11,0
Cooling water flow rate	m³/hod	19,311	5,110	22,025	5,135	21,349	5,729	24,613	5,843	23,387	6,347	27,200	6,550
Draught behind boiler	Pa	173,0	25,0	170,0	26,0	194,0	25,0	190,0	26,0	215,0	25,0	210,0	26,0
Ambient temperature	°C	27,0	24,0	28,0	24,0	29,0	25,7	28,5	24,6	30,2	27,1	29,2	24,9
Relative air humidity	%	32,0	33,0	35,0	35,0	27,0	28,0	29,5	28,6	21,1	22,8	23,7	22,4
Barometric pressure	kPa	99,10	99,30	99,05	99,15	99,20	99,30	99,02	99,07	99,20	99,30	98,99	98,99
Flue gas analysis													
Oxygen O_2	%	8,06	9,43	7,24	10,73	8,52	8,48	7,30	10,25	8,99	7,53	7,36	9,77
Carbon dioxide CO_2	%	11,26	10,10	11,95	9,31	11,05	10,58	11,74	9,75	10,85	11,06	11,54	10,18
Carbon monoxide CO	ppm	105	111	139	167	128	89	176	160	151	67	214	153
Higher hydrocarbons OGC	ppm	9	3	2	6	13	2	1	5	16	0	0	4
Nitrogen dioxides Nox	ppm	68	67	100	65	62	72	106	73	56	78	112	81
Dust	mg/m³	25	29	66	67	19	28	86	79	14	27	106	92
02 = 10%													
Carbon monoxide CO	mg/m³	116	144	140	227	144	106	178	207	173	68	216	188
Higher hydrocarbons OGC	mg/m³	5	2	1	3	6	1	1	3	8	0	0	2
Nitrogen dioxides Nox	mg/m³	118	130	164	139	111	130	174	151	105	130	185	162
Dust	mg/m³	20	29	30	48	17	25	34	48	13	22	39	48

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Guarantees and Maintenance

Guarantees: 2 years for complete equipment
5 years for boiler body

Maintenance:
Weekly: boiler and silo visual check, ash box emptying
Monthly: boiler parts functionality check, bearings lubrication and chains tightening
Half-yearly: boiler general check and cleaning, bearings lubrication and chains tightening
Yearly: boiler general check by SHT service technician, bearings lubrication and chains tightening, cleaning and check before / after heating season

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Economy advantages of Biomass

1) Significant savings on energy cost: 20 – 65%
2) Savings with SMART boilers efficiency
3) Savings on human attendance
4) Savings on ecology taxation
5) Local source of fuel – money stays in the region
6) Local people employment

SMART HEATING TECHNOLOGY

Automatic Boilers SMART 150 – 500 kW

Customer's services / Project diagram

1) Evaluation of current situation / state
2) Processing technical solutions
3) Expenses / Returnability calculation
4) Manufacture made-to-measure
5) Delivering technology + installation
6) Installation monitoring 24/7
7) Service and maintenance
8) Fuel deliveries
9) Payments from saving / Part-payments

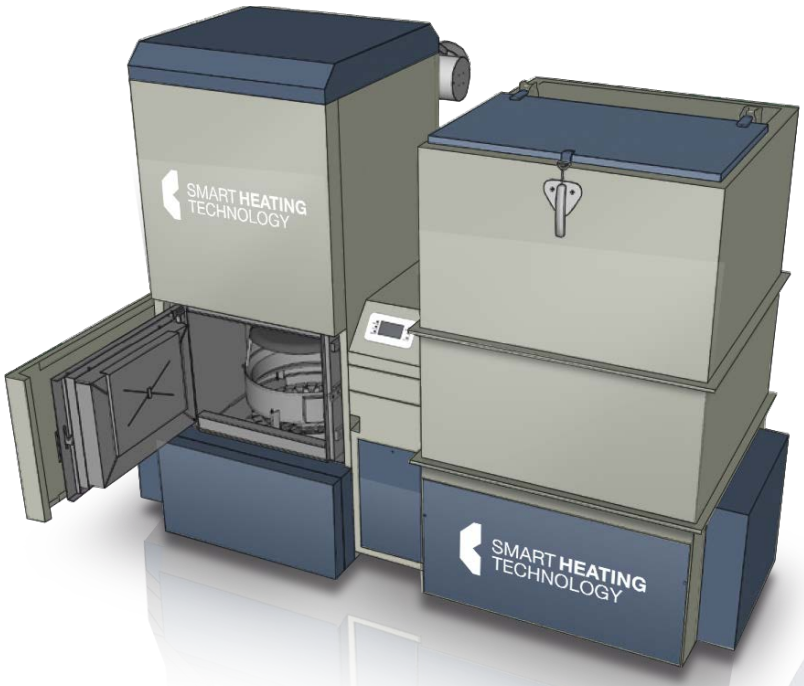
SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

Boiler Design Features



SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

Smart Boilers Application Options

Extensive Houses And Smaller-Scale:

1) Apartment Buildings
2) Multifunctional Buildings
3) Production Plants & Industrial Premises & Storage Premises
4) Agriculture & Aquaculture & Horticulture Farms
5) Hotels/Motels/Wellness Centres/Pools
6) Sport Complexes
7) Municipality Buildings
8) Schools, Hospitals, Police & Army Complexes

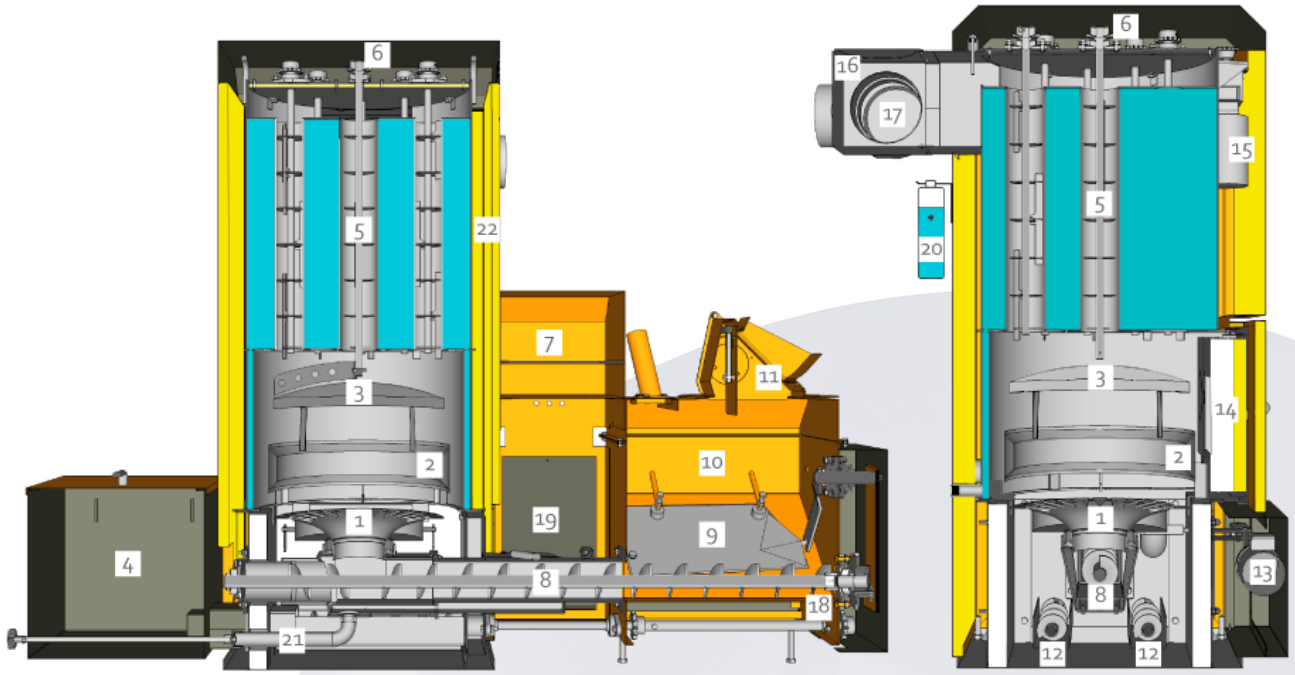
SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

Front and Side View

Description:

1. Primary burner with moving grate
2. Secondary crown of additional
3. combustion
3. Deflector
4. Ash Bin
5. Heat exchanger with turbulators
6. Turbulator drive
7. Control Unit Siemens with Display
8. Feed screw
9. Disrupting mechanism
10. Operational Fuel Bin
11. Flap separating intermediate
12. container and fuel conveyor
12. Ash screws
13. Grating motor
14. Service boiler door
15. Turbulator drive motor
16. Chimney extension
17. Exhaust fan
18. Feed and ash screw motor
19. Accessories
    - Primary and secondary fan
    - Igniting fan
    - Emergency extinguishing device
20. Extinguishing canister with a level sensor
21. Air duct cleaning
22. Dual boiler insulation



SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

Designation		60	80	100
Nominal power Pn	kW	60	80	100
Partial load Pmin	kW	17	23	29
Boiler efficiency at Pn	%	90	89,4	88,2
Boiler efficiency at Pmin	%	89,1	88,5	87,7
Boiler class		5	5	5
Noise level	dB	< 65	< 65	< 65
Weight	kg	783	997	1042
Water				
Volume of water	l	129	105	105
Water connection diameter	"	2	2	2
Water connection diameter	DN	50	50	50
Hydraulic boiler loss attemperature gradient of 10°	mbar	17	29,9	47
Hydraulic boiler loss attemperature gradient of 20°	mbar	4,3	7,5	11,9
Boiler temperature	°C	65-90	65-90	65-90
Min. temperature of return water	°C	55	55	55
Max. operating pressure	bar	3,5	3,5	3,5
Test pressure	bar	6	6	6

SMART HEATING TECHNOLOGY

Automatic Biomass Boilers SMART 60–100 kW

Hearth temperature	°C			
Hearth pressure	mbar	-0,01	-0,01	-0,01
Required chimney draught	mbar	0,2	0,2	0,2
Need for artificial draught		yes	yes	yes
Flue gas temperature at Pn	°C	185	195	205
Mass flow rate of flue gas at Pn	°C	90	95	105
Flue gas temperature at Pmin	kg/h	180	240	300
Mass flow rate of flue gas at Pmin	kg/h	60	81	99
Volume of flue gas at Pn	m3/h	141	188	235
Volume of flue gas at Pmin	m3/h	47	63,5	77,6
Smoke pipe diameter	mm	200	200	200
Chimney diameter	mm	200	200	200
Type of chimney		Moisture – resistant		
Fuel				
Maximum size	cm	3	3	3
Maximum moisture content	%	30	30	30
Electric equipment				
Connection				
Total	W	3131	3131	3131
Ingress Protection Rating (IP)		41	41	41

SMART **HEATING**
TECHNOLOGY

Smart Hot-Air Unit 30–50 kW

Wood Pellet Air Handling Biomass Boiler Unit

SMART **HEATING** TECHNOLOGY

Thermal and technical parametres	Unit	Smart Hot-Air Unit 30 kW	Smart Hot-Air Unit 50 kW
Rated output	kW	29	49,5
Output range	kW	8,6 - 29	14,6 - 49,5
Fuel consumption	kg x hrs-1	1,9 - 6,6	3,44 - 11,63
Efficiency (rated output)	%	90,9	90,4
Flue Gas temperature rated output	°C	94 - 148	110 - 153
Class of the boiler		5	5
Burning time min/rated output (based on fuel storage of 250 kg)	hours	147 - 42	80 - 24
Technical parameters of products			
Weight	kg	815	920
Water content	litres	140	190
Flue duct diameter	mm	150	160
Dimension (widthxdepth) excluding ash box	mm	1130 x 1900	1130 x 1900
Maximum water pressure	bar	up to 3	up to 3
Required flue draught	mbar	0,1 - 0,2	0,1 - 0,3
Recommended operating temperature of heating water	°C	60 - 80	60 - 80
Lowest temperature of incoming water	°C	55	55
Sound power level	dB	57	57
Output power 70/50°C, 10°C	kW	32,48	53,91
Air circulation range in open space	m	22,5	17,5
Middle level of sound pressure	dB	64,5	67,2
Electrical parametres of products			
Connection voltage		230VAC ±10 %, 50Hz ± 2Hz	230VAC ±10 %, 50Hz ± 2Hz
Maximum electrical input – ignition	V	1200	1200
Electrical protection of the control unit		IP54	IP54
Electrical protection of the boiler wiring		IP20	IP20
Fuel and its parametres			
Wood pellets diameter	mm	6,0 - 8,5	6,0 - 8,5
Calorific value	MJ/kg	approximately 16 - 18	approximately 16 - 18
Water content		Up to 10 %	Up to 10 %
Ash content		Up to 1 % (0,8 - 1,0 %)	Up to 1 % (0,8 - 1,0 %)

SMART HEATING TECHNOLOGY

Smart Hot-Air Unit 30–50 kW

Smart Hot-Air Delivery Description

1) Compact steel supporting pallet for easy handling & positioning
2) Smart 30/50 kW Wood Pellet Boiler
3) 250 kg fuel store including fuel auger
4) 2 000 mm 3-layers chimney set
5) Hot-Air fan unit with 0–270 degree movement range
6) Circulation pump
7) Drain valve
8) Pressure control
9) Expansion tank
10) Pressure release valve
11) Automatic control vent
12) Heat meter – Optional

SMART **HEATING**
TECHNOLOGY

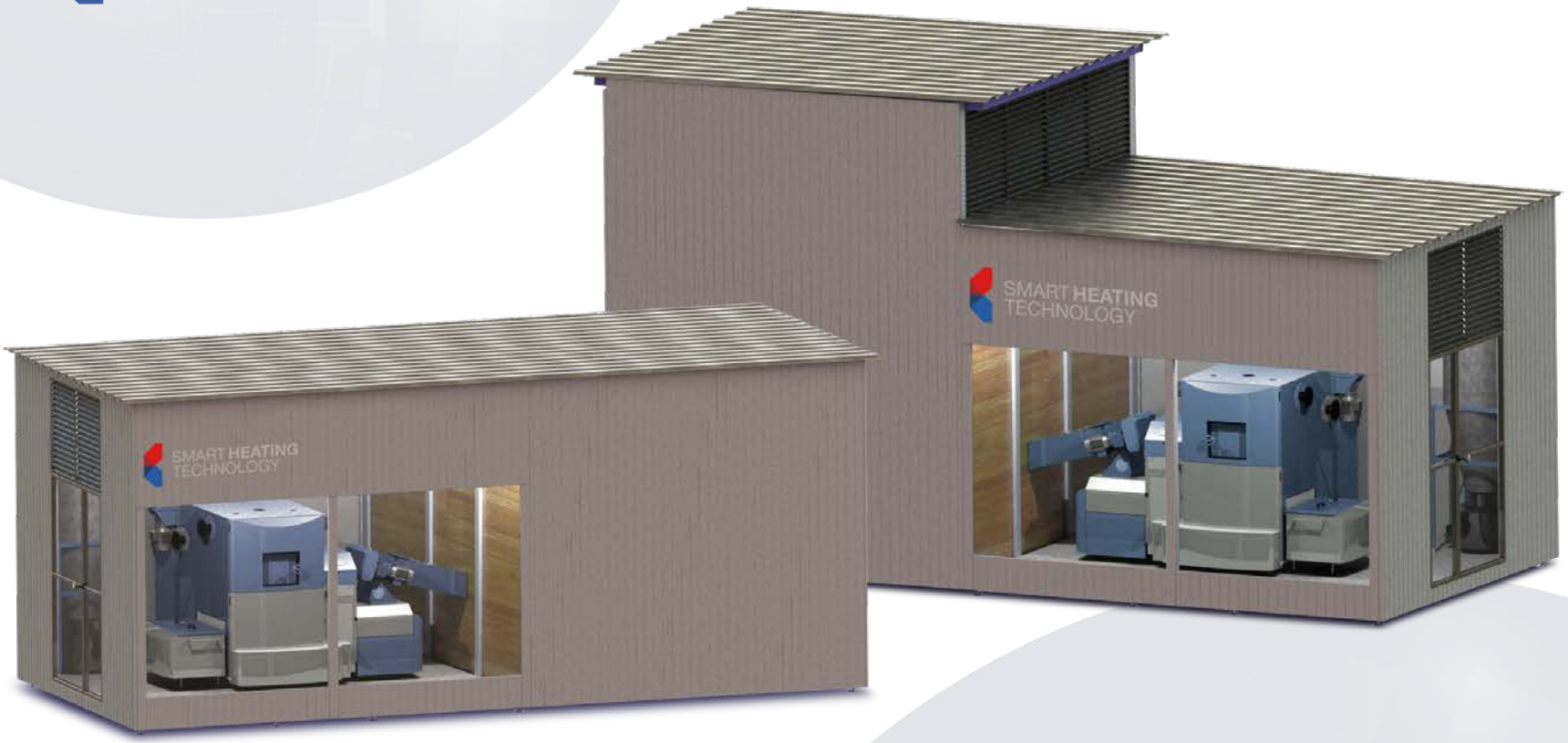
Installation Space Requirements:

Smart Hot-Air Unit Dimensiones:
1 900 x 1 130 x 2 88

SMART **HEATING**
TECHNOLOGY

Smart Hot-Air Unit 30–50 kW

SMART HEATING TECHNOLOGY



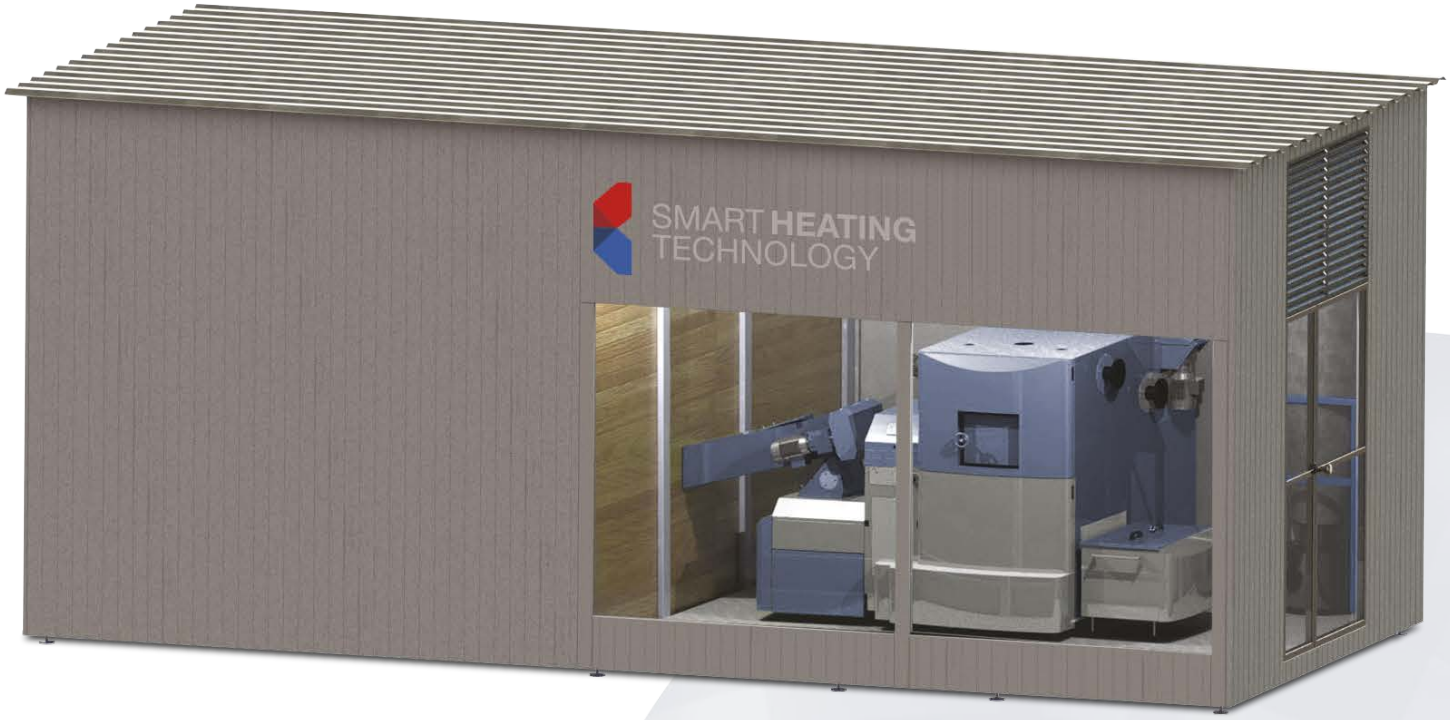
Smart Bio-House 150–500 kW

Pre-manufactured Biomass Boiler House

SMART HEATING TECHNOLOGY

Smart Bio-House 150–500 kW

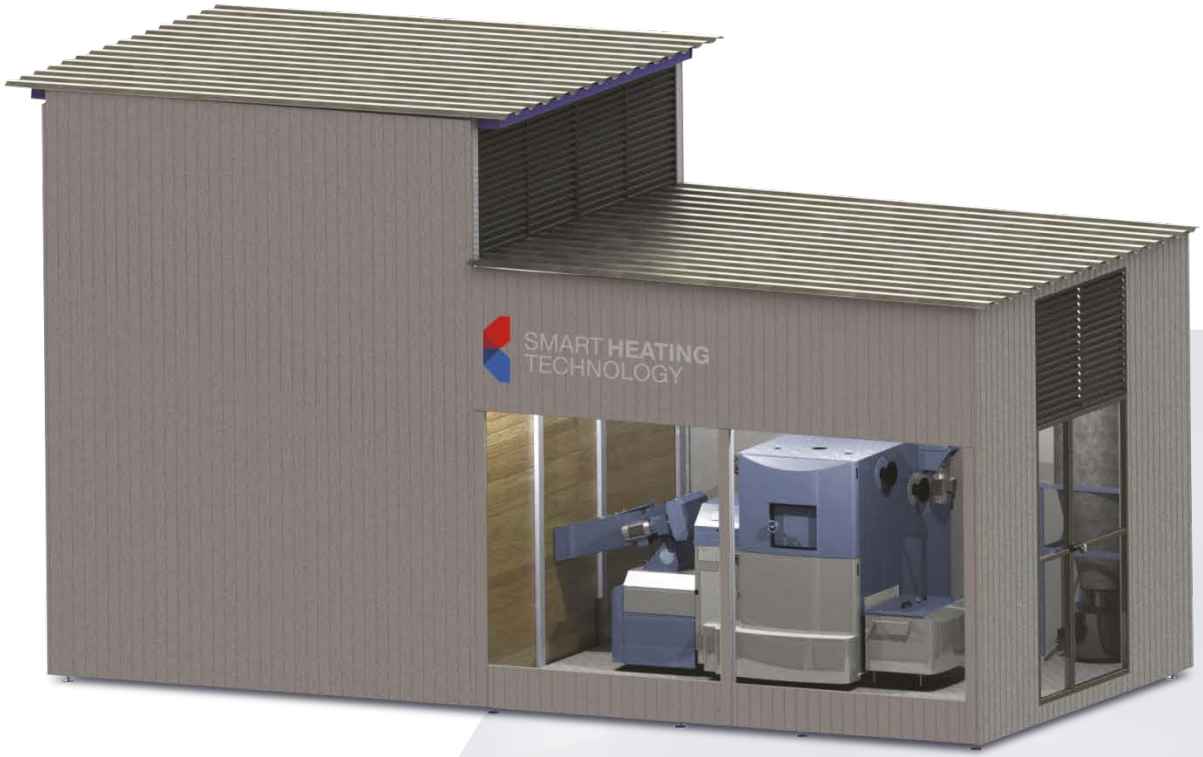
Boiler House Design



SMART HEATING TECHNOLOGY

Smart Bio-House 150–500 kW

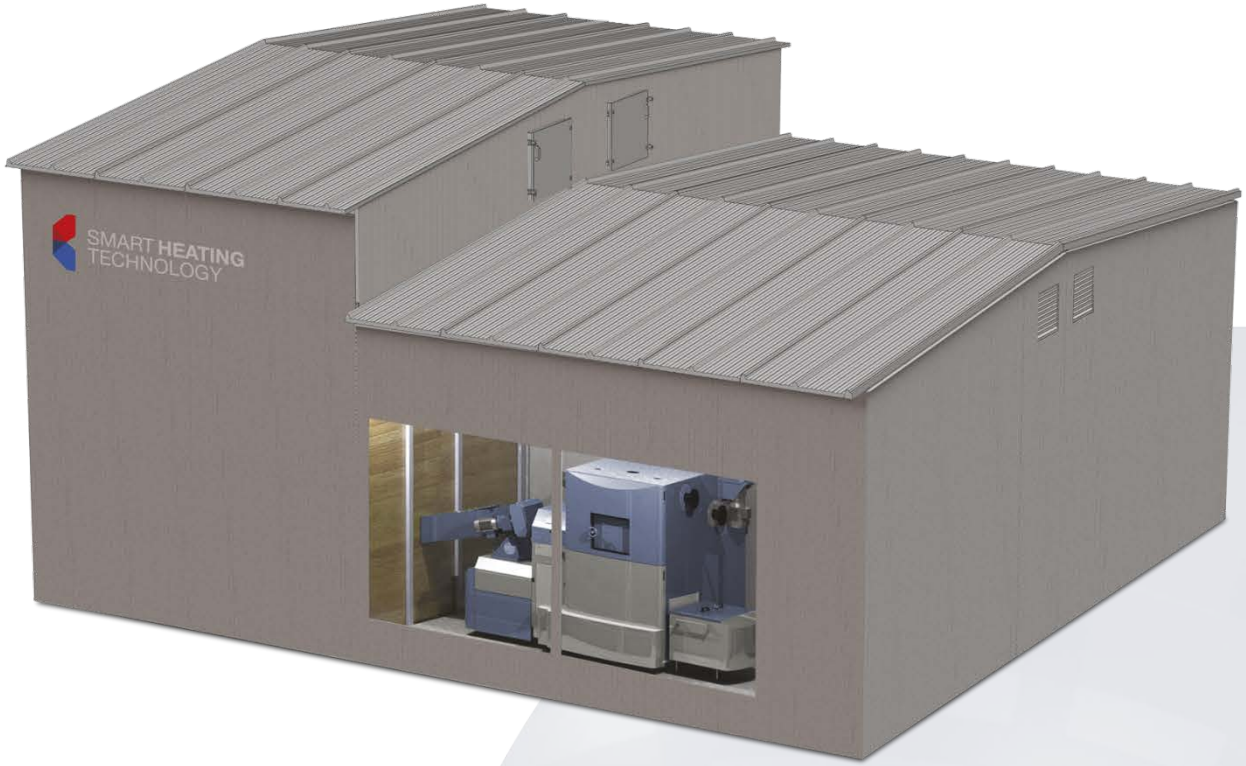
Boiler House Design with Silo



SMART HEATING TECHNOLOGY

Smart Bio-House 150–500 kW

Special Boiler Houses Design



SMART HEATING TECHNOLOGY

Smart Bio-House 150–500 kW

Pre-manufactured Boiler House technical solution options:

1) With / Without silo solution
2) Left / Right Bio-House design
3) Hydraulic / Manual roof for wood chip Boiler House design
4) Glass / Metal doors design
5) Special safety features
6) External design according to special customer requirement

Minimum – Maximum dimensions of the BIO-HOUSE:

3 x 3 m – 9 x 9 m

Standard Colours Design Options:

SMART **HEATING** TECHNOLOGY

Smart Cabin 150–500 kW

Mobile Biomass Boiler House

SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Specification and Design


City design


Nature design


Basic design

Dimensions and Weights:

150–250 kW: 3 x 3 x 12,6 m ~ 12 tons*

300–500 kW: 3,2 x 3 x 12,6 m ~ 15 tons*

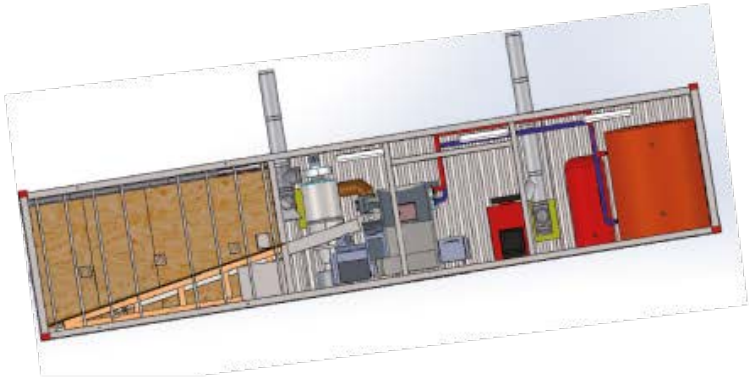
SMART HEATING TECHNOLOGY

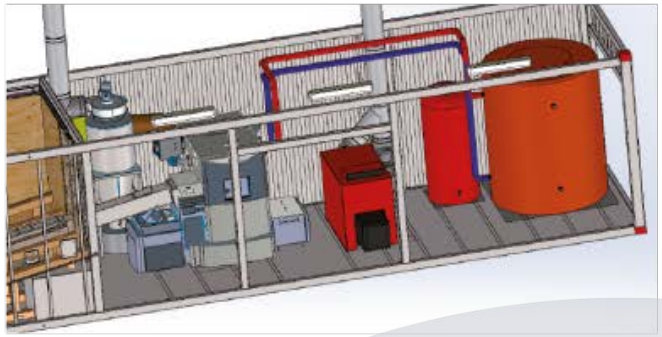
Smart Cabin 150–500 kW

SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Mobile container technical solution options:



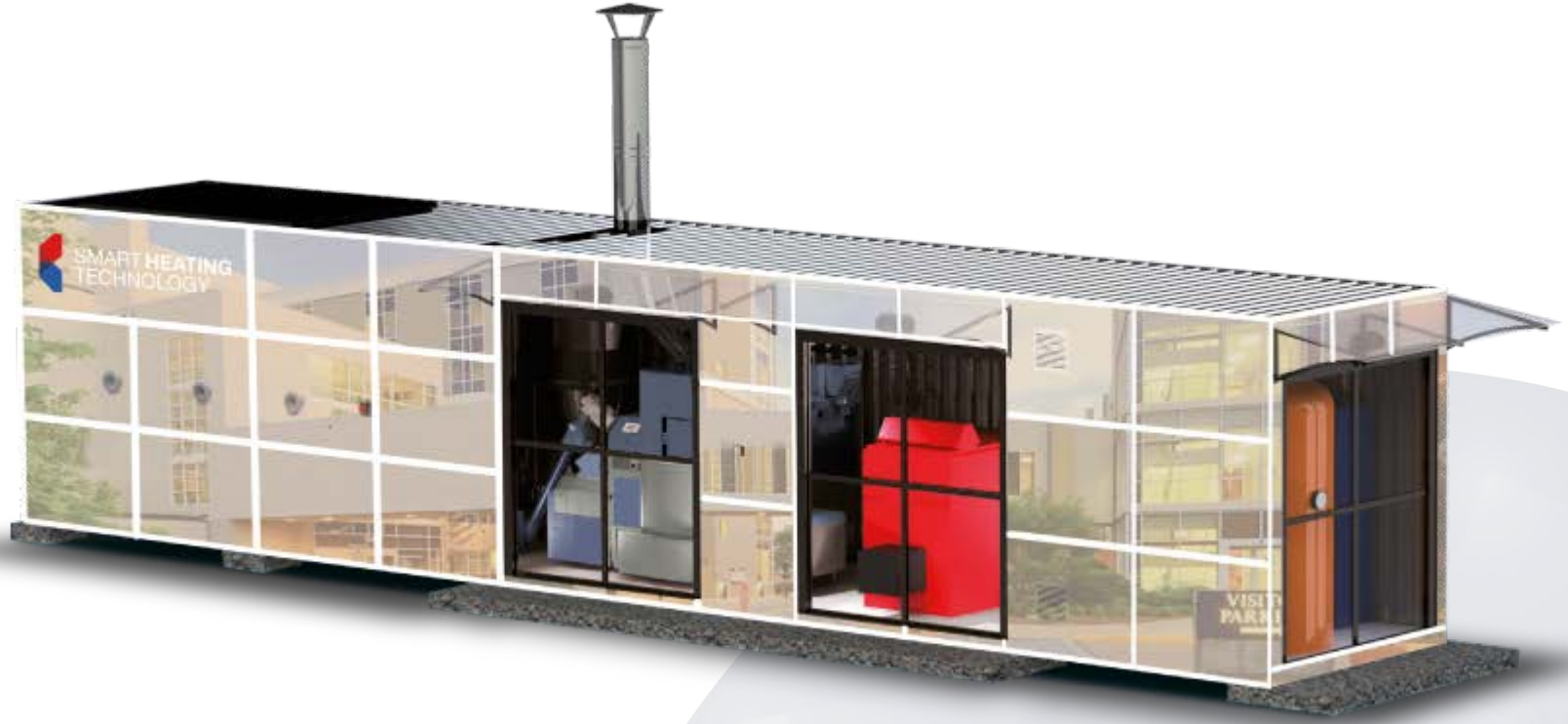


1) Left / Right Container design
2) Hydraulic roof for wood chip container design
3) Glass / Metal doors design
4) Special safety features
5) External design according to special customer requirement

SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Smart Industrial Heating Solution



SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Smart Industrial Heating Solution Application Options:

1) Apartment Buildings
2) Multifunctional Buildings
3) Shopping Centres
4) Production Plants & Industrial Premises & Storage Premises
5) Hotels/Motels/Wellness Centres/Pools
6) Sport Arenas
7) Municipality Buildings
8) Schools, Hospitals, Police & Army Complexes
9) City Districts

SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Smart Greenhouse Heating Solution

SMART HEATING TECHNOLOGY

Smart Cabin 150–500 kW

Smart GreenHouse Heating Solution Application Options:

1) GreenHouse Heating – Hot-water/Hot-air /DHW preparation
2) Poultry Farms – Hot-water/Hot-air /DHW preparation
3) Cattle Farms Hot-water – Hot-water/Hot-air /DHW preparation
4) Pig Farms Hot-water – Hot-water/Hot-air /DHW preparation
5) Fish Farms – Hot-water/Hot-air /DHW preparation
6) ZOO – Hot-water/Hot-air /DHW preparation
7) Material Drying Solutions & DHW preparation

SMART HEATING TECHNOLOGY

Smart Cabin 150–1500 kW

Standard Smart Cabin Design with Solar / Photovoltaic Roof & Walls Panels with Complete Preparation for High-Efficiency Functionality

SMART HEATING TECHNOLOGY

Smart Cabin 150–1500 kW

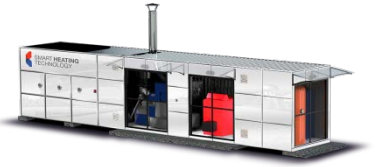
Smart Cabin Design Options:

Smart Cabin Basic
150-500 kW

Smart Cabin Basic
150-500 kW

Smart Cabin Nature
150-500 kW

Smart Cabin Nature
150-500 kW



Smart Cabin City
150-500 kW

Smart Cabin City
150-500 kW

Smart Cabin City
150-500 kW

Smart Solar/Photovoltaic
Cabin 150-1500 kW

Smart Self-Drying Cabin
150-1500 kW

Smart Magnum Cabin
300-1500 kW

Smart Magnum Cabin
with Filtration Unit 150-500 kW

Smart Army Cabin
150-1500 kW

Smart Emergency Cabin
150-1500 kW

Smart Police Cabin
150-1500 kW

Smart Fire Cabin
150-1500 kW

SMART HEATING TECHNOLOGY

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