

# Universal automatic biomass combustion warm water boilers



From an environmental alternative to energy independence.

### **CST***fire* for the environment

It is now universally acknowledged that the combustion of fossil fuels brings about a number of negative effects to environment and nowadays is the greenhouse effect really discussed topic.

The problem involves the fact that carbon (C), which millions of years ago was bound to deposits of fossil fuels in the depths of the earth due to the effects of geophysical processes, through combustion is released back into the earth's atmosphere in the form of  $CO_2$ , where its amount exponentially grows. Thus it has a negative effect on the development of the climate, even though there are greatly varying viewpoints in this respect.

### Does it follow then, that no greenhouse gases (CO<sub>2</sub>) result from the combustion of biomass?

It was through the decomposition of plants that coal, oil and natural gas emerged. The essential difference consists in the fact that plants are a renewable source of energy, for which  $CO_2$  is the necessary prerequisite of their growth. It has been proved that the combustion of biomass generates approximately as much  $CO_2$  as the plant consumes as it grows. A cycle develops where we speak about  $CO_2$ -neutral combustion. The amount of greenhouse gases in the atmosphere does not increase and moreover, almost no emissions of  $SO_2$  are released into the air.

Combustion of biomass may lead us to more interesting results. It can help us in reducing our energy dependence upon the supply of fossil fuels, in particular natural gas. Many years of experience however have shown that as a result of the installation of our facilities, a number of clients have become fully independent in the field of heat energy. That primarily applies to wood processing companies, block of flats, recreational buildings, municipal authorities, agricultural farms, etc.





### Product Properties HAMONT



Biomass boilers Hamont continued in the best tradition of manufacturing automatic boilers with high degree of comfort in basic version. The boilers are produced with validate European standard ČSN EN 303-5: 2013 and they are certified by engineering test institute Brno (SZU), which is Notified body 1015, accredited for assessment of conformity.

#### They are mainly characterised by the following:

- Fully automated operation
- Ecological and Economic operation
- Regulated the range of 30-100%
- Protection against reverse burning
- Optimizes the combustion process by monitoring the oxygen surplus values with Lambda Probe.
- Container 1 -1,4 m³ type USV
- Fuel transfer from warehouse (type USZI)
- High-temperature combustion chamber with continuous monitoring of under pressure
- Combustion crown primary and secondary fans.
- The ash is automatically conveyed to the ash container
- · Automatically cleaning of heat exchanger
- Automatically ignition
- Independent grating fuel
- Exhaust fan, ceramic deflector
- Control unit with a touch screen
- Operation visualization can be connected by the Internet, distance control, subtraction of date
- Universality of fuel
- Program can be adapted to customer requirements









## Description of the HAMONT 40-101 kW boiler and functions

Power series: 40 kW - 49 kW - 60 kW - 80 kW - 99 kW - 100 kW - 101 kW

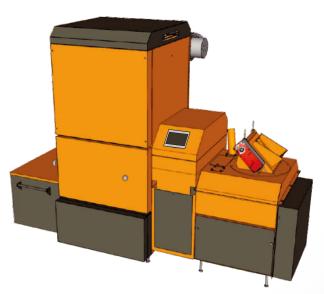
The boilers are supplied either with a 1-1.4 m³ volume fuel container (USV) or with a central staging device, which automatically feeds the fuel in from the central warehouse to the intermediate boiler container (USZI). The fuel is transported via a screw conveyor into the boiler's combustion chamber where it is ignited automatically. The boiler is equipped with a high-temperature combustion chamber with a round burner and primary air inlet, with an additional combustion crown above with a secondary air inlet.

Both connections of combustion air are controlled by two independent fans. The flow of exhaust gases is corrected prior to entering the heat exchanger, using a so-called deflector that ensures optimum finish-combustion. For the present power series, the heat exchanger is located above the hearth and the cleaning of its heat transfer surfaces

is provided automatically. In this way, the high efficiency of the equipment is ensured. The optimum flow of flue gases is provided for by an exhaust fan. Once the combustion process has been completed, the ashes are conveyed to the ash container by two screw conveyors. The function of the entire boiler is controlled by a control unit, which allows the setting of the required mode for various fuels, as well as two-way communication via a GSM modem, or visualised communication. The control unit optimises the combustion process across the entire range of the boiler's powers by continually reading the oxygen surplus in the flue gases by a lambda probe. That ensures the high efficiency of the facility across the entire range of controllability. Boiler power can be regulated within the range of 30 to 100%.



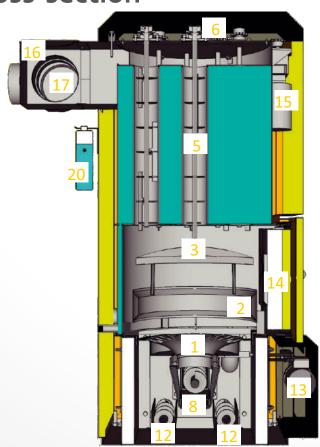
**Model USV** 



Model USZI



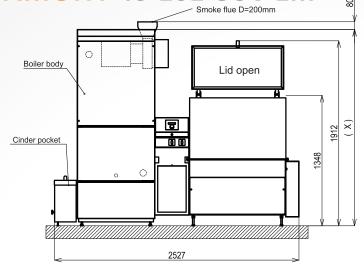
# Side cross-section

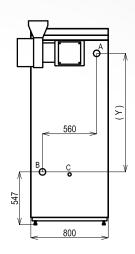


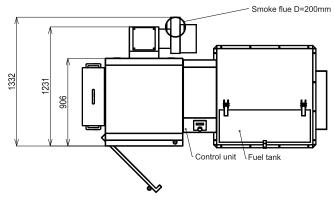
- 1. Primary burner with a moving grate
- 2. Secondary crown of additional combustion
- 3. Ceramic deflector
- 4. Ash container
- 5. Heat exchanger with turbulators
- 6. Turbulator drive
- 7. Control panel with control system
- 8. Feed screw
- 9. Disrupting mechanism
- 10. Intermediate fuel container
- **11.** Separating flap of the intermediate container and fuel conveyor
- 12. Ash screws
- 13. Grating motor
- 14. Boiler service door
- 15. Turbulator drive motor
- 16. Chimney extension
- 17. Exhaust fan
- 18. Feed motor and ash screw motor
- 19. Accessories Primary and secondary fan
  - Ignition fan
  - Emergency spark extinguishing device
- 21. Air duct cleaning
- 22. Double boiler insulation



## HAMONT 40-101 USV 1m<sup>3</sup> Smoke flue D=200mm

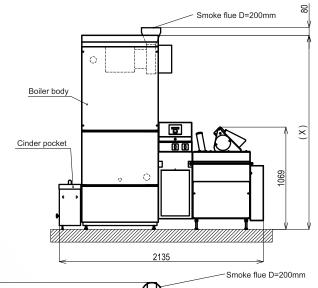


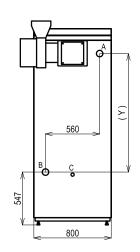




Type HAMONT	40kW	49kW	60kW	80kW	99kW	100kW	101kW
High (X):	1830	1830	1830	1830	2030	2030	2030
Pitch (Y):	1025	1025	1025	1025	1225	1225	1225

### **HAMONT 40-101 USZI**





					Smoke flue D=200mm
	1		$\neg r \neg \Psi$		Separating flap
1332	1231	ĵ			
V	↓ ↓		,		ol unit
				Contro	or unit sintermediate container

Type HAMONT	40kW	49kW	60kW	80kW	99kW	100kW	101kW
High (X):	1830	1830	1830	1830	2030	2030	2030
Pitch (Y):	1025	1025	1025	1025	1225	1225	1225

A = Water - outlet G2"

B = Water – inlet G2"

C = discharge G<sub>3</sub>/<sub>4</sub>"

## HAMONT boiler technical data 40 – 101 US.. S1

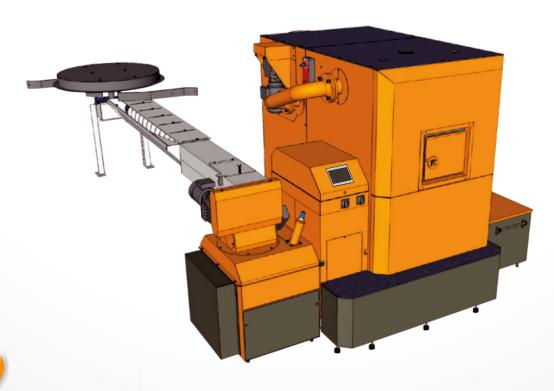
Designation		40	49	60	80	99	100	101
Nominal power Pn	kW	40	49	60	80	99	100	101
Partial load Pmin	kW	11	14	17	23	28	28	28
Boiler class / Fuel C1- wood pellets			-		5			
Ecodesign according to Commission								
Regulation (EU) No.2015/1189 for fuel C1		yes						
Boiler class / Fuel B1- wood chips					5			
Ecodesign according to Commission								
Regulation (EU) No.2015/1189 for fuel B1					yes			
Noise level	dB				< 65			
Weight	kg	732	783	997	997	1042	1042	1042
Water								
Volume of water	I	165	129	129	105	115	115	115
Water connection diameter	DN				50			
Hydraulic boiler loss at		7.5	17	17	20.0	47	47	4.7
temperature gradient of 10°C	mbar	7,5	17	17	29,9	47	47	47
Hydraulic boiler loss at		1.0	4.2	4.2	7.5	11.0	11.0	11.0
temperature gradient of 20°C	mbar	1,9	4,3	4,3	7,5	11,9	11,9	11,9
Boiler temperature	°C	60-90						
Min. temperature of return water	°C				55			
Max. temperature outlet water	°C				95			
Max. operating pressure	bar				3,5			
Test pressure	bar				5			
Hearth temperature	°C				900-1100			
Hearth pressure	mbar				-0,04			
Required chimney draught	mbar				0,15			
Need for artificial draught					Yes			
Flue gas temperature at Pn	°C	133	135	148	153	165	165	165
Flue gas temperature at Pmin	°C	91	88	94	93	96	96	96
Volume of flue gas at Pn	kg/h	120	150	180	240	300	300	300
Volume of flue gas at P <sub>min</sub>	kg/h	39	50	60	81	99	99	99
Chimney execution				\	/lhkuodoln	ý		
Smoke pipe diameter	mm				200			
Chimney diameter	mm				200			
Fuel								
Wood pellets ČSN EN ISO 17225-2					plus, A1, A2	<u> </u>		
Wood chips ČSN EN ISO 17225-4		Moisture content M35, class A1, A2, B1 a size P16S, P31S						
Electric equipment								
Connection						z, TNC-S/16		
Total installed power	W	3048	3048	3131	3131	3131	3131	3131
Average operating power consumption	W	260	324	388	515	618	618	618

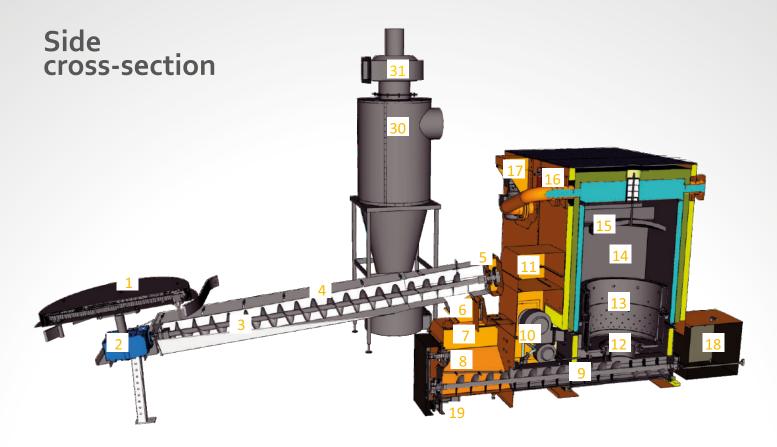
### Description of the HAMONT 150-500 kW boiler and functions

Power series: 150 kW - 180 kW - 199 kW - 220 kW - 250 kW 300 kW - 350 kW - 400 kW - 450 kW - 499 kW - 500 kW

The boilers are predominantly supplied with moving equipment, which is moving from fuel warehouse to the boiler's intermediate container (USZI). Alternatively, the boiler may be installed with a 1-1.4 m<sup>3</sup> volume fuel container (USV). With account taken of the capacity of the boiler container, it is recommended for the present modification to further automate the supply of fuel (such as in combination with a silo). A screw conveyor is used to feed the fuel to the high-temperature combustion chamber, where it is ignited automatically. It burns out on a circular burner while primary air is fed in. The two-part secondary crown of additional combustion with secondary and tertiary air supply located above it provide for the full combustion of the emerging gases. Full combustion is supported by the deflector located above the combustion chamber, which at the same time adequately rectifies the direction of the flue gases prior to their entry into the heat exchanger. The same is located above the hearth, and its heat

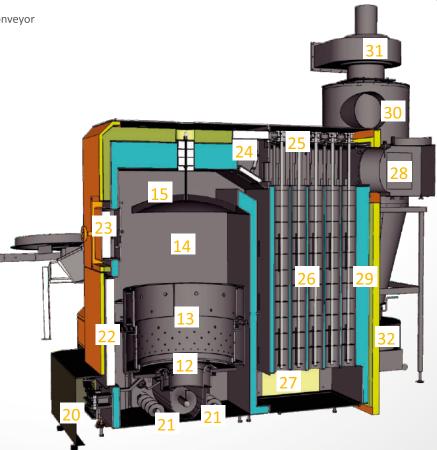
transfer surfaces are cleaned automatically. This guarantees the high efficiency of the system. Optimal flow of flue gases is ensured by an exhaust with continuous control as a function of the actual under pressure in the combustion chamber, which is continually readout. For boilers falling into this power series, the exhaust fan is a part of the separator of solid pollutants (cyclone). Once burnt out, the ash is carried into the ash pocket using two feed screws. The function of the entire boiler is controlled by a control unit, which allows the setting of the required mode for each fuel used, and simultaneous two-way communication via a GSM modem, which may be visualised. The control unit optimises the combustion process across the entire range of power of the boiler by continually monitoring the oxygen surplus values by a lambda probe in the flue gases. That guarantees the high efficiency of the facility across the entire range of controllability. Boiler power may be controlled within the range of 30 to 100%.



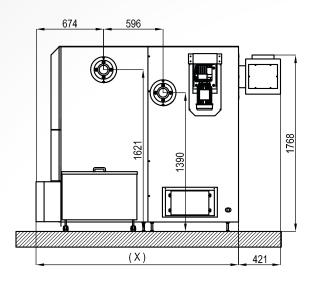


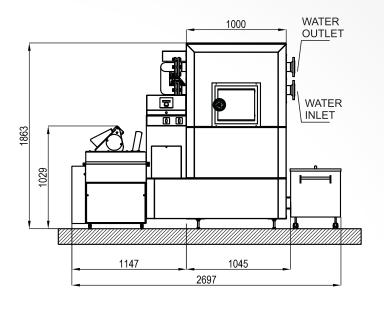
- 1. Spatial staging stirrer
- 2. Stirrer screw gear box
- 3. Conveyor screw
- 4. Fuel conveyor
- 5. Conveyor motor and gear box
- 6. Separating flap of the intermediate container and conveyor
- 7. Intermediate fuel container
- 8. Disrupting mechanism
- 9. Feed screw
- 10. Accessories primary fan
  - -secondary 1 fan
  - -secondary 2 fan
  - -igniting fan
  - -emergency extinguishing facility
- 11. Control panel with a control system
- 12. Primary burner with a moving grate
- 13. Two-way secondary crown of additional combustion
- 14. Combustion chamber
- 15. Ceramic deflector
- 16. Servo-drive of the flap of heat exchanger
- 17. Turbulator drive motor
- 18. Ash container
- 19. Feed screw motor
- 20. Grating mechanism with a motor
- 21. Ash screws
- 22. Boiler service door
- 23. Boiler inspection door
- 24. Exchanger flap
- 25. Turbulator drive
- 26. Heat exchanger with turbulators
- 27. Heat exchanger ash exhaust
- 28. Chimney extension
- 29. Double boiler insulation
- 30. Separator of solid pollutants
- 31. Exhaust fan
- 32. Separator ash container

# Front cross-section



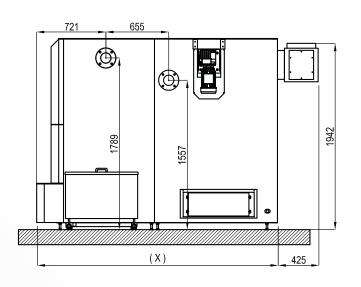
### **HAMONT 150 – 250 kW - USZI**

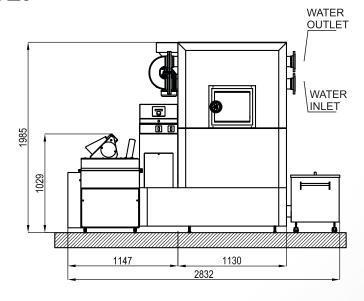




Type HAMONT	150kW	180kW	199kW	220kW	250kW
Length (X):	1668	1788	1908	1908	2028

### **HAMONT 300 – 500 kW - USZI**





Type HAMONT	300kW	350kW	400kW	450kW	499kW	500kW
Length (X):	2028	2148	2268	2388	2508	2508

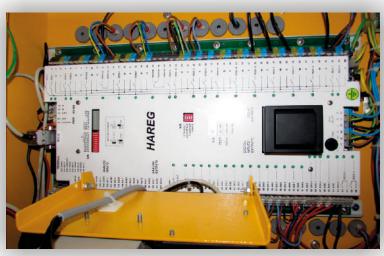
## HAMONT boiler technical data 150 - 500 US.. S1

Designation		150	180	199	220	250	300	350	400	450	499	500
Nominal power Pn	kW	150	180	199	220	250	300	350	400	450	499	500
Partial Load P <sub>min</sub>	kW	40	45	50	55	65	75	90	100	115	140	140
Boiler class / Fuel C1-wood pellets	1000	10	5					110	110			
Ecodesign according to Commission												
Regulation (EU) No.2015/1189 for fuel C1							yes					
Boiler class / Fuel B1 - wood chips							5					
Ecodesign according to Commission Regulation (EU) No.2015/1189 for fuel B1							yes					
Noise level	dB						< 65					
	kg	2290	2370	2450	2450	2530	2750	2850	2950	3150	3250	3250
Weight	1/8	2230	2370	2430	2430	2330	2730	2030	2330	3130	3230	3230
Water Volume of water	ı	380	420	460	460	500	690	740	790	850	900	900
	DN	300	720	80/PN6		300	030		100/PN6		300	300
Water connection diameter	DIV			00/1110					100/1100			
Hydraulic boiler loss at	mbar	65	73	80	80	87	95	102	110	122	130	130
temperature gradient of 10°C  Hydraulic boiler loss at	IIIDai	03	, ,	00	00	07	33	102	110	122	130	130
′	mbar	16	18	20	19	21	23	24	26	29	31	31
temperature gradient of 20°C	°C	10	10	20	13		60-90	2-1			31	01
Boiler temperature	°C						55					
Min. temperature of return water	°C						95					
Max. temperature outlet water	bar						3,5					
Max. operating pressure	bar						5					
Test pressure	°C						900-1100	)				
Hearth temperature	mbar						-0,04					
Hearth pressure  Required chimney draught	mbar						0,15					
Need for artificial draught	IIIDai						yes					
Flue gas temperature at Pn	°C	129	124	118	116	113	109	109	108	108	107	107
Draught after the boiler at Pn	Pa	123	127	110	110	113	20	103	100	100	107	107
Flue gas temperature at Pmin	°C	72	71	68	68	67	65	64	64	63	63	63
Draught after the boiler at Pmin	Pa	12	/ 1	00	00	07	20	04	04	05	03	05
Volume of flue gas at Pn	kg/h	367	405	430	455	493	644	730	815	901	986	986
Volume of flue gas at Pmin	kg/h	140	152	160	168	180	238	243	247	252	256	256
Boiler operation	18/11	140	132				ation in t				230	
Chimney execution							nt to mo		zkenange			
Smoke pipe diameter	mm			220		_ , 651500			300			
Chimney diameter	mm			220					300			
Fuel	111111			220					300			
Wood pellets ČSN EN ISO 17225-2	A1 EN plus, A1, A2 EN plus											
Wood chips ČSN EN ISO 17225-4		Moisture content M35, class A1, A2, B1 a size P16S, P31S										
Electric equipment				5,510	. 2 231100			, 51 0	3.23 , 20	, . 515		
Connect					3PFN	. 3X400/	230V-50	Hz. TNC-	S/16A			
Total installed power	W	4307	4307	4307	4307	4307	5719	6269	6269	6269	6269	6269
Average operating power consumption	W	266	300	334	369	403	693	713	733	752	772	772
Average operating power consumption	۷V	200	300	334	ح ا	403	055	113	, 33	132	///	///

### **Control unit**

The boiler's activities are managed by control unit HAREG by adjusted program.

- Communication protocol Modus RTU, Modus RTU/IP or just status signal.
- Sending failure signals and communication via GSM gate.
- Touch screen and remote internet management in the basic menu
- Ability to control accumulation tank, two equithermic heating branches and heating TUV in base.
- Select operating language (CZ, SK, EN, ES, FR, PL)



Control unit HAREG situated in boiler switchboard

# Boilers operating elements



Main switch panel

Main switch interrupts the flow of current into the switchboard, and therefore of the entire boiler. This switch also can turn on and off entire boiler.

#### Reverse switch of the boiler

Reverse switch changes the direction of rotation of three-phase drives.

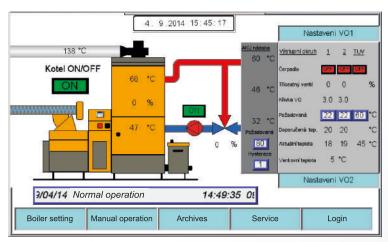
There are three drives:

Position 0 - drives are switched off

Position 1 - the direction of rotation is in the position where ensure correct operation of the boiler.

Position 2 - the direction of rotation is in the reverse gear.

Industrial terminal with touch screen is used to configure and control boiler. Operation occurs via touch buttons. Control and setting the passwords are accessed by the user levels of a user ability. There are three level security settings to prevent incorrect operation of the boiler. The terminal allows you to set a weekly schedule of boiler operation on the weekdays or their summaries.



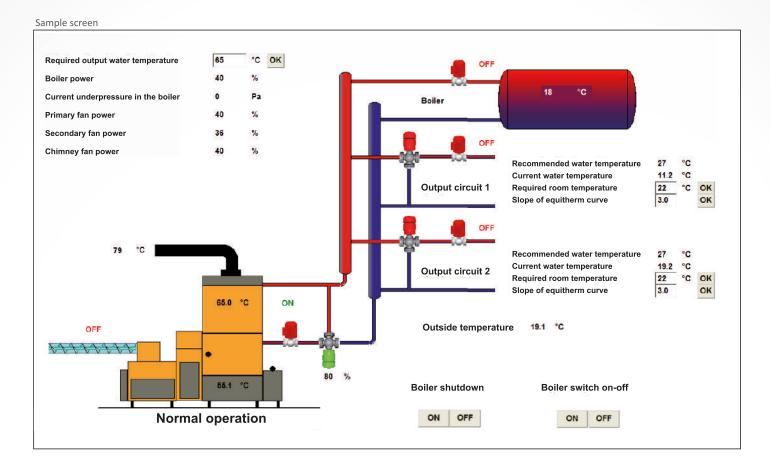
Graphic touchscreen



### Visualization of boiler operation

It is up the possibility of remote supervision and changes in certain parameters of the device HAMONT.

This simple visualization allows control of input and output temperature, control of temperature heating circuits and the operating status of the boiler. It also allows you to remotely set the desired temperature of the boiler input parameters heating circuits or devices remotely turn on or off.



### Safety and economy of operation

Two levels of protection against reverse combustion boiler overheating protection when - according to EN 303-5: 2013. By law is applicable to automatic biomass combustion equipment prescribed to prevent burn-back along the transport channel to the fuel depot. At our facilities are available following precautions:

- 1.Position motor opens and closes the flap transportation of fuel begins when fully open flap. When is a failure or power outage, the flap closes over the spring automatically. When we carry out maintenance, flap must be closed except work with directly related.
- 2. The emergency spark extinguishing device, which is part of the feed screw, it is consist of safety thermostatic valve. (The thermostatic valve has maximum temperature for opening 95°C). And barrel of water with sensor of water level. The capillary inside a thermostatic valve is welded on the both sides with the feed screw. In the barrel of water is drain valve, which must be in open position. In the case that the emergency spark is active. A fuel which is the feed screw is flushed by water. Sensor of water level turns off the boiler automatically.
- 3. The device is protected by safety and irreversible thermostat. When exceeding the boiler temperature above 110 °C, the device is shutting down.

## Types of fuels used



**Crushed wood – e.g. as recycled** 30x30 mm (40x40) fraction –moisture content up to 35%



**Wood chips**30x30 mm (40x40) fraction –moisture content up to 35%



Wooden briquettes 80 mm dia – 50 mm length



Sawdust with a volume fraction of abrasion dust



Mix chipboard waste + wood chips
Sawdust, granulate, pressed briquettes (boilers over 300 kW)



Paper pellets or briquettes



**Fine shavings** 



Poppy seeds and poppy seed briquettes



Wooden pellets
6 mm and 8 mm dia

Crushed bark
Chaff (linen and hemp) and briquettes
Sunflower pellets ...

### Theoretical (calculated) consumption of fuel of HAMONT boilers

The practical consumption for the entire heating season 210 days, approximately 60% of the stated values

consumption		Type of fuel							
for the time period	Type of boiler		18MJ/kg) g/prms)	Sawdust (1 (150 kg	.2,5MJ/kg)	Wood chips (12,5MJ/kg) (230 kg/prms)			
t		kg	prms	kg	prms	kg	prms		
Day	Hamont 40 kW	212,86	0,33	306,52	2,04	306,52	1,33		
Year	Hamont 40 kW	44 701	69	64 369	429	64 369	280		
Day	Hamont 49 kW	266,43	0,41	383,66	2,56	383,66	1,67		
Year	Hamont 49 kW	55 951	86	80 569	537	80 569	351		
Day	Hamont 60 kW	320,00	0,49	460,80	3,07	460,80	2,00		
Year	Hamont 60 kW	67 200	103	96 768	645	96 768	421		
Day	Hamont 80 kW	429,53	0,66	618,52	4,12	618,52	2,69		
Year	Hamont 80 kW	90 201	139	129 890	866	129 890	565		
Day	Hamont 99 kW	544,22	0,84	783,67	5,22	783,67	3,41		
Year	Hamont 99 kW	114 286	176	164 571	1 097	164 571	716		
Day	Hamont 100 kW	544,22	0,84	783,67	5,22	783,67	3,41		
Year	Hamont 100 kW	114 286	176	164 571	1 097	164 571	716		
Day	Hamont 101 kW	544,22	0,84	783,67	5,22	783,67	3,41		
Year	Hamont 101 kW	114 286	176	164 571	1 097	164 571	716		
Day	Hamont 150 kW	760,30	1,17	1 094,83	7,30	1 094,83	4,76		
Year	Hamont 150 kW	159 662	246	229 913	1 533	229 913	1 000		
Day	Hamont 180 kW	910,43	1,40	1 311,02	8,74	1 311,02	5,70		
Year	Hamont 180 kW	191 191	294	275 315	1 835	275 315	1 197		
Day	Hamont 199 kW	1 010,42	1,56	1 455,01	9,70	1 455,01	6,33		
Year	Hamont 199 kW	21 503	327	305 552	2 037	305 552	1 329		
Day	Hamont 220 kW	1 110,41	1,71	1 598,99	10,66	1 598,99	6,95		
Year	Hamont 220 kW	233 186	359	335 788	2 239	335 788	1 460		
Day	Hamont 250 kW	1 259,18	1,94	1 813,22	12,09	1 813,22	7,88		
Year	Hamont 250 kW	264 428	407	380 776	2 539	380 776	1 656		
Day	Hamont 300 kW	1 536,82	2,36	2 213,02	14,75	2 213,02	9,62		
Year	Hamont 300 kW	322 732	497	464 734	3 098	464 734	2 021		
Day	Hamont 350 kW	1 783,44	2,74	2 568,15	17,12	2 568,15	11,17		
Year	Hamont 350 kW	374 522	576	539 312	3 595	539 312	2 345		
Day	Hamont 400 kW	2 027,46	3,12	2 909,54	19,46	2 919,54	12,69		
Year	Hamont 400 kW	425 766	655	613 102	4 087	613 102	2 666		
Day	Hamont 450 kW	2 271,29	3,49	3 270,66	21,80	3 270,66	14,22		
Year	Hamont 450 kW	476 972	734	686 839	4 579	686 839	2 986		
Day	Hamont 499 kW	2 510,46	3,86	3 615,06	24,10	3 615,06	15,72		
Year	Hamont 499 kW	527 197	811	759 163	5 061	759 163	3 301		
Day	Hamont 500 kW	2 510,46	3,86	3 615,06	24,10	3 615,06	15,72		
Year	Hamont 500 kW	527 197	811	759 163	5 061	759 163	3 301		

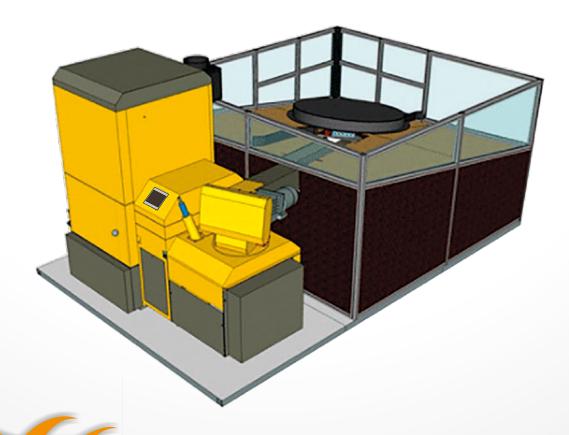
Fuel consumption depends on the method of heating, heat losses, and the quality of the fuel moisture content and the state of the heating system.

### **Conveyor systems**

### Screw conveyor with a spring rake mechanism **HAMONT**

If we want to achieve greater operator comfort (both lower power boilers and higher power boilers), we select the conveyor system at the fuel warehouse by type of fuel used. Transport of fuels from warehouses, regardless of whether they are specially designed silos or rooms in existing buildings specially modified for those purposes, is provided for by a spatial staging system. The premises of the warehouse may have a circular, square, or rectangular (4:3) ground plan, and the flow may be next to, over or below the level of the boiler room floor. The staging system therefore can also be adapted with regard to the various layouts of the warehouse thanks to the fact that the conveyor may be oriented vis-à-vis the intermediate container near the boiler within the range of 230° in the horizontal and 25° in the vertical plane. The length of the conveyor may then be up to 12 metres. Our spatial staging system is equipped with a screw conveyor with a dual screw shaft support, which displays a progressive rising gradient that prevents clogging. The transport of fuel from the warehouse begins the moment

the ultrasonic sensor in the intermediate container assesses the amount of fuel as being insufficient. The time required for the top-up of the optimum quantity off fuel changes depending on the energy content and apparent density of fuel. The servo -driven separating flap in the mouth of the conveyor ensures protection against reverse burning, complemented by emergency extinguishers. The flap is open for such period of time only as required for the fuel to be topped up, and then it hermetically separates the intermediate container from the fuel warehouse. Optimum emptying of the fuel warehouse, even for large diameters of the spatial stirrer, is ensured by means of the uniform pressure of arms across its entire diameter range. The average leaf spring beam modification in connection with massive steel arms: 5,5 m. The high reliability, life and wear resistance are given by the structural solution, materials used, and components. This system is suitable for the case of heating different fuels (wood chips, pellets, crushed wood, soft briquettes, ... ) according to the availability of fuel, this system is universal.



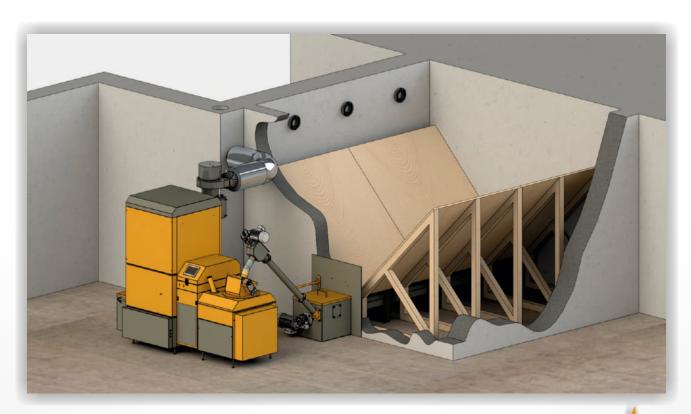
### **Associated conveyors**

The best transportation of fuel for boilers connected in cascade is to choose a common conveyor system. This is common for both boilers stirrer and a separate screw conveyors to individual boilers.

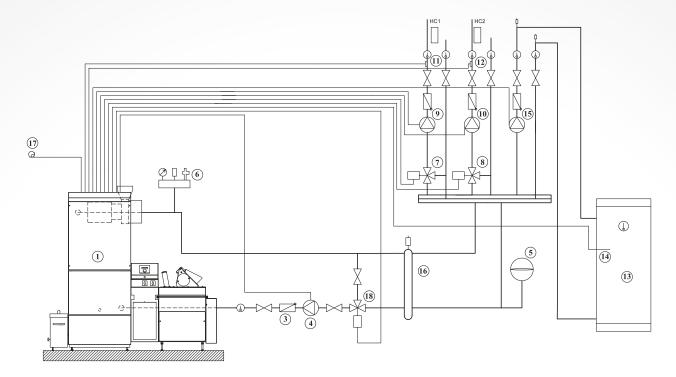


### The screw pellet conveyor **HAMONT**

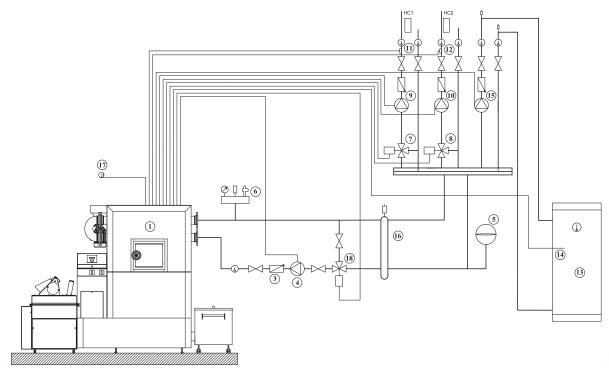
If the boiler will burn only wood pellets, we offer a variant of the warehouse in a V-shaped, at an angle about  $45^{\circ}$ . There is a possibility of complete emptying of warehouse and also the possibility of fulfilling blowing pellets from storage tank to storage. Maximum length of warehouse is 6,5 m. The disadvantage is unused warehouse space under descent boards.



### Example of hydraulic connection of 40 – 101 kW boiler HAMONT



### Example of hydraulic connection of 150 – 500 kW boiler HAMONT



- 1. Boiler
- 3. Reverse flap
- 4. Circulating pump
- 5. Pressure expansion vessel
- 6. Overpressure valve, manometer, bleed valve
- 7. 3-way valve HC1
- 8. 3-way valve HC2

- 9. Pump HC1
- 10. Pump HC2
- 11. Temperature sensor HC1
- 12. Temperature sensor HC2
- 13. Boiler
- **14.** Boiler temperature sensor
- 15. Boiler pump
- **16.** Hydraulic pressure equaliser
- 17. Outdoor sensor
- 18. 3-way shorting valve

### Reference installations





City: Valašské Meziříčí (CZ)

Boiler type: 2 x HAMONT 500 kW USZI

Fuel: Waste from production Year of realization: 2000/2010



Object: Block of flats + Brewery

City: Karpentná (CZ)

**Boiler type: HAMONT 500 kW USZI** 

**Fuel: Wood chips** 

Year of realization: 2006





Object: Container boiler house City: Visby - Gotland (Sweden) Boiler type: HAMONT 250 kW USZI

**Fuel: Wood chips** 

Year of realization: 2010





Object: SOŠ Frýdek-Místek City: Frýdek-Místek (CZ)

**Boiler type: 4x HAMONT 100 kW USZI** 

**Fuel: Pellets** 

Year of realization: 2011





Object: OÚ Margecany City: Margecany (SK)

**Boiler type: 2x HAMONT 250 kW USZI** 

**Fuel: Pellets** 

Year of realization: 2011





Object: Ador CZ s.r.o. City: Dolní Dobrouč (CZ)

**Boiler type: HAMONT 400 kW USZI** 

Fuel: Soft briquettes
Year of realization: 2012





**Object: housing estate Čerčany** 

City: Čerčany (CZ)

**Boiler type: HAMONT 400 kW USZI** 

**Fuel: Pellets** 

Year of realization: 2013















Boiler type: HAMONT 400 kW USZI HAMONT 150 kW USZI

**Fuel: Pellets** 

Year of realization: 2013

**Object: Cestmajsterstvo Ilava** 

City: Ilava (SK)

**Boiler type: HAMONT 60 kW USZI** 

**Fuel: Wood chips** 

Year of realization: 2014

**Object: ZŠ Kvasice** 

City: Kvasice, okr. Kroměříž (CZ) Boiler type: 2 x HAMONT 199 kW USZI

**Fuel: Pellets** 

Year of realization: 2015

**Object: Jack Tighe Ltd.** 

City: Scunthorpe, Park Farm Rd (GB) Boiler type: 8 x HAMONT 499 kW

**Fuel: Pellets** 

Year of realization: 2016

Object: Družstvo Dřevotvar City: Jamné nad Orlicí ( CZ )

**Boiler type: HAMONT 400 kW USZI** 

Fuel: štěpka

Year of realization: 2017











### More information:

CSTfire s.r.o. will pleased to provide you personally with information on the advantages of heating with HAMONT devices.

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