

We develop
for your future

Wood log boiler HVS

*Ecological heating with
highest comfort!*



System technology
made in Bavaria

HVS E *ECONOMIC*

HVS LC *LAMBDA CONTROL*

boiler sizes from
16 kW to 100 kW

*Very high boiler efficiency factor!
Extremely low emission values!*

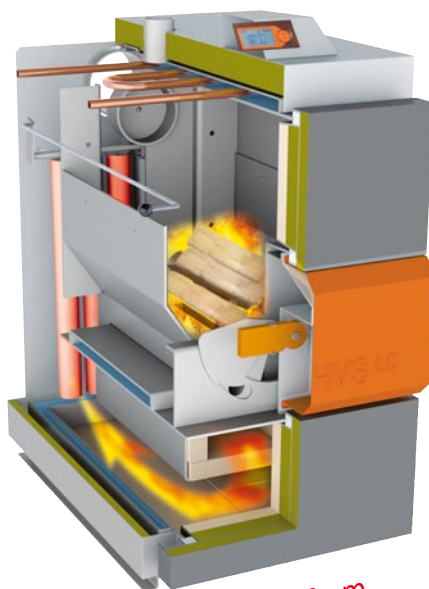


Solarbayer®

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Solarbayer wood log heating – Little effort from refueling to cleaning!

Just fill in logs, ignite them and everything else is working just by itself. The large fuel chamber provides a long combustion period. The integrated fan guarantees an unproblematic start. The fuel chamber door and its bolt do not give way for smoke emission. Moreover, the combustion is stabilized throughout the whole combustion period by the fan and enables an unproblematic operation. Even the boiler size with 25kW can comfortably be filled with 0,5m logs through the large fuel chamber door. An excess length of the logs is, at least to some extent, no problem due to the depth of the fuel chamber. Long refueling intervals are the result of the large filling capacity. An increase in performance and very good exhaust gas values are achieved by a „hot air duct“ inside the tank.



Two different types are available:

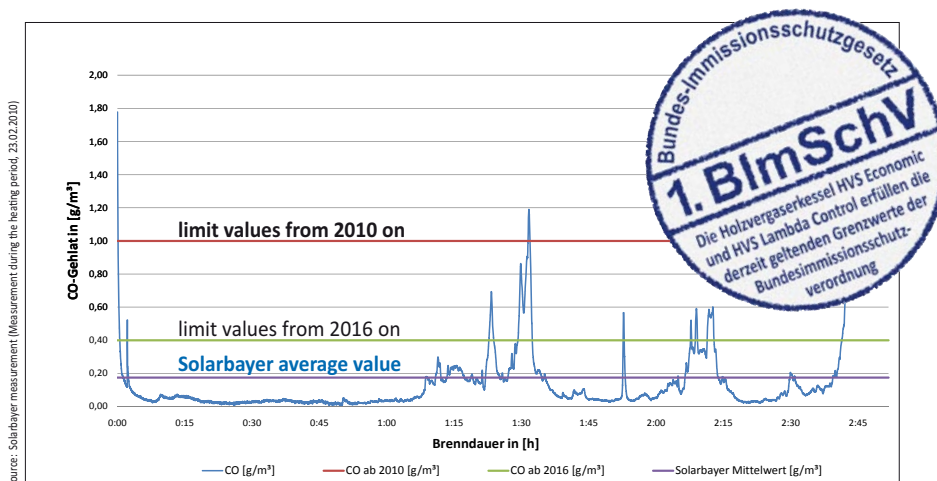
Option 1: HVS E (without lambda control)

Option 2: HVS LC (with lambda control)

available from
16 kW to 100 kW



Perfect combustion – low emission



The gasifying wood log boiler HVS E and HVS LC fulfill the momentary valid limit values of the German regulation (1. BImSchV).

The HVS LC already fulfills the limit values for dust emission that are valid from 2017 on.

Thus, the boiler fulfills all necessary requirements for BAFA grants in Germany (dated: February 2012).

Werkszertifikat

Hiermit wird auf unsere eigene Verantwortung erklärt, dass das nachstehend beschriebene Produkt den derzeit geltenden europäischen Richtlinien und Vorschriften entspricht.

Typbezeichnung: Holzvergaserkessel HVS 25 LC
 Nennwärmeleistung: 25 kW
 Bauart: Stahlkessel nach DIN EN 303-5 mit Verbrennungsluftgebläse und Lambdasonde
 Brennstoffe: naturbelassenes Scheitholz
 Beschickungseinrichtung: Handbeschickung
 Kesselhersteller: Solarbayer GmbH Am Dörrerhof 22 D-81535 Pullenfeld-Preith

Prüfbericht Nr.: 103000021/2

Prüfergebnisse bezüglich der heizungstechnischen Anforderungen:

HVS 25 LC	Prüfgebnisse (Emissionen bezogen auf 10 Vol.% O ₂)	Prüfgebnisse (Emissionen bezogen auf 13 Vol.% O ₂)
Problemmatrix	–	–
Kesseltemperatur	163	163
CO-Emissionen	276	201
CO-Emissionen (Erfolgt)	95	–
Staub-Emissionen	38	19
NOx-Emissionen	140	–

Pullenfeld-Preith, 19. November 2010

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 Geschäftsführer Solarbayer GmbH

Hinweis für Deutschland

1. BImSchV: Unterschreitet die Grenzwerte der Stufe 2 für Anlagen, die ab 1. Januar 2017 errichtet werden.

Hinweis für die Schweiz
 VWF® Brandschutzanwendung Nr. 16498:
 Entspricht den Schweizerischen Brandschutzvorschriften (Feuergefährdungs- und Rauchvermeidungsmaßnahmen)

The emission values detected during certification are all stated in our factory certificates. Those are available for download on our homepage.

HVS E [Economic]

Wood log boiler without lambda control

Performance optimized and exhaust gas managed control unit

The HVS Economic achieves very clean emission values even without lambda control.

Due to the use of latest control technology a product was created that under-runs the already determined exhaust gas requirements. You can make the best possible use of the combustible with this boiler series and you also respect the environment.

Each model is equipped with the electronic combustion control. The permanent observation of the exhaust gas and boiler temperature means perfect comfort for you and a steady and even combustion for your logs. The physics of the combustion process has been adopted from nature and integrated into our boilers in an excellent way.

The logical cooperation of exhaust gas and boiler temperature in certain intervals is used to add the combustion air in an optimized way.

Available with a nominal heat output of:
25, 40, 60 and 100 kW



With regional wood, a modern heating system and an appropriate application you contribute to the fact that your wood log boiler provides cozy warmth and does not harm the climate.

HVS LC [Lambda Control]

Wood log boiler with lambda control

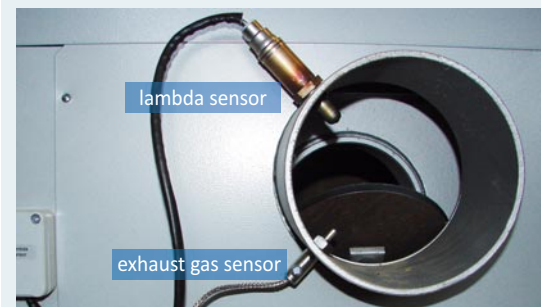
Combustion optimized performance and firing control unit due to permanent lambda control

The permanently increasing environmental impact by dust and CO₂ urges the industry on new developments and more modern technology in all areas. A modern and modular control concept of our wood log boiler series HVS LC ensures more performance and a low, environmentally friendly pollutant emission due to the serially integrated lambda sensor which observes permanently the exhaust gas values.

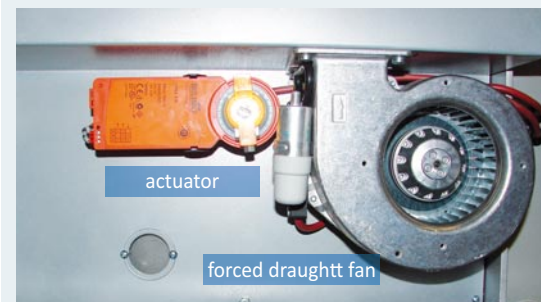
With the help of the integrated boiler and exhaust gas logic the intelligent control recognizes the requirements of energy. Due to the modulating air supply the boiler is able to react to a possible power reserve and can therefore ensure an almost perfect exploitation of combustibles. This means the highest possible comfort for you and a steady and even combustion for your wood.

You can only achieve an optimal efficiency factor with a perfectly aligned system. Therefore, we generally recommend our high quality stratification tanks SPS with integrated, patented, stratification system. The produced heat of the wood log boiler can be perfectly stored in this kind of tank. The stored thermal energy is relieved into the heating system when needed. This keeps your fuel consumption as low as possible and even preserves the environment.

Available with a nominal heat output of:
16, 25, 40, 60 and 100 kW



Permanent combustion optimization due to exhaust gas analysis via lambda sensor and adjustable exhaust gas temperature



The actuator guarantees a perfect adjustment of the air quantity

Dimensions and weight			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
height	A	mm	1135	1135	1370	1420	1420
width	B	mm	590	590	590	760	760
width including slider	C	mm	645	645	645	785	785
depth	D	mm	840	1070	1070	1260	1650
height flow line	E	mm	1075	1075	1310	1400	1400
height exhaust pipe (middle)	F	mm	890	890	1110	1170	1170
height return line	G	mm	115	115	125	215	215
height draining	H	mm	55	55	70	135	135
flue spigot	Ø	mm	Ø 159	Ø 159	Ø 196	Ø 196	Ø 196
boiler flow line/boiler return line	Ø	inch	2" IG	2" IG	2" IG	2" IG	2" IG
safety heat exchanger	Ø	inch	¾"	¾"	¾"	¾"	¾"
immersion sleeve for safety heat exchanger	Ø	inch	½"	½"	½"	½"	½"
draining	Ø	inch	½"	½"	½"	¾"	¾"
boiler weight		kg	400	430	460	760	950

Technical facts			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
nominal output in kW	kW		16	25	40	60	100
boiler output with	kW		12-18	5 bis 31	8 bis 41	15 bis 72	25 bis 100
efficiency factor	%				86 – 92 %		
water capacity	Liter		60	75	93	180	215
max. operating pressure	bar		3	3	3	3	3
pressure loss at nominal load (Δt 10 K)	mbar		9,35	9,75	10,48	12,77	11,5
pressure loss at nominal load (Δt 20 K)	mbar		1,00	1,05	2,55	3,19	2,82
permissible pressure range safety valve	bar		min. 1 to max. 4				
water inlet temperature safety valve	°C		4-15°C				
opening temperature safety valve	°C		at 95°C				
noise level	dB		45,0	45,5	47,7	51,4	54,2

Fuel chamber/fuel consumption			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
admissible fuel			untreated, split wood log with residual moisture of <20%				
max. wood log length	mm		350	550	550	700	1000
fuel chamber depth	mm		370	560	560	750	1085
fuel chamber height	mm		490	490	750	730	730
fuel chamber width	mm		440	440	440	575	575
dimension of the filling hole w/h	mm		435/255	435/255	435/255	575/318	575/318
fuel chamber capacity, volume liter approx.	Liter		80	116	180	310	455
max. filling weight (beech) approx	kg		20	30	48	80	120
fuel consumption at nominal load (beech) approx.	kg/Std.		4,5	7,1	11,2	17	25
combustion period at nominal load (beech) approx.	Std.		4,4	4,2	4,3	4,5	4,5

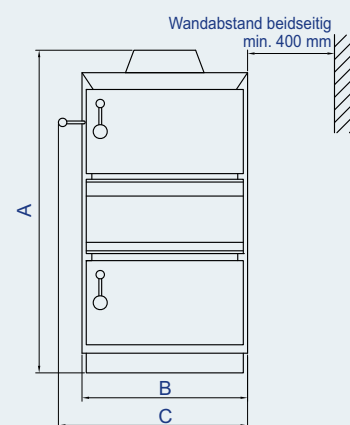
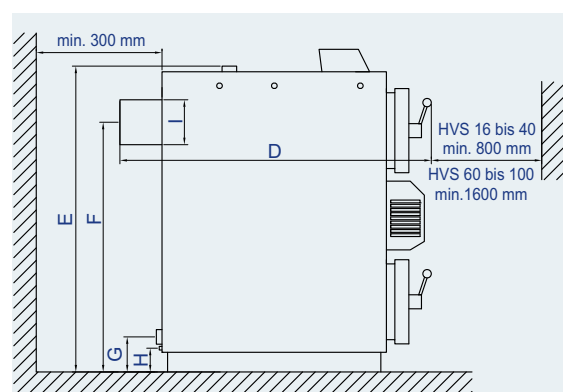
Chimney requirements/ exhaust gas values			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
recommended min. chimney cross section Ø	mm		140	150	180	180	200
draft requirements	Pa		15-25	15-25	15-25	15-30	15-30
effective minimum chimney height	Meter		approx. 7 meter				
exhaust gas mass flow (Bezug 13% CO ₂)	kg/s		0,019	0,023	0,029	0,035	0,035
modulating exhaust gas temperature	°C		ca. 150-260				
barometric damper			recommended				

Electrical data			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
mains voltage/frequency	V/Hz		230/50				
power consumption – standby	W		0,35				
power consumption – operation	W		63				

Hydraulic			HVS 16 LC	HVS 25 E HVS 25 LC	HVS 40 E HVS 40 LC	HVS 60 E HVS 60 LC	HVS 100 E HVS 100 LC
recommended min. buffer tank volume ¹	Liter		1000	1500	2200	3300	5500
manufacturer's recommendation ¹	Liter		1500	2000	3000	5000	6000
min. tube dimension (CU-/steel presision tube) ²	mm		Ø 28	Ø 28	Ø 35	Ø 42	Ø 54
min. tube dimension (steel tube) ²	–		DN25/1"	DN25/1"	DN32/1¼"	DN40/1½"	DN50/2"
recommended boiler return line temperature	°C		70°C				

¹Regulatory framework and government grants should to be paid attention to.

²Depending on tube length, number of elbows installed, mixing valves, changeover valves, etc., you might need a bigger dimension. The above mentioned tube dimensions are only a recommendation and do not replace professional technical planning.



For a safe and smooth operation of the boiler you will need the following accessories:

- boiler charging unit
- thermal discharge safety valve (for protection against overheating)
- stratification buffer tank SPS with insulation, for perfect heat efficiency
- expansion vessel for heating water (approx. 10% of the system's capacity)
- barometric damper
- it is possible to retrofit the system with an induced draft fan when chimney drafts seem to be a bit difficult in order to refill the fuels cleanly

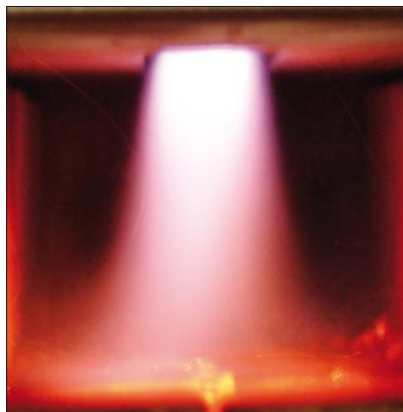
The above listed components are available as easy to install complete sets



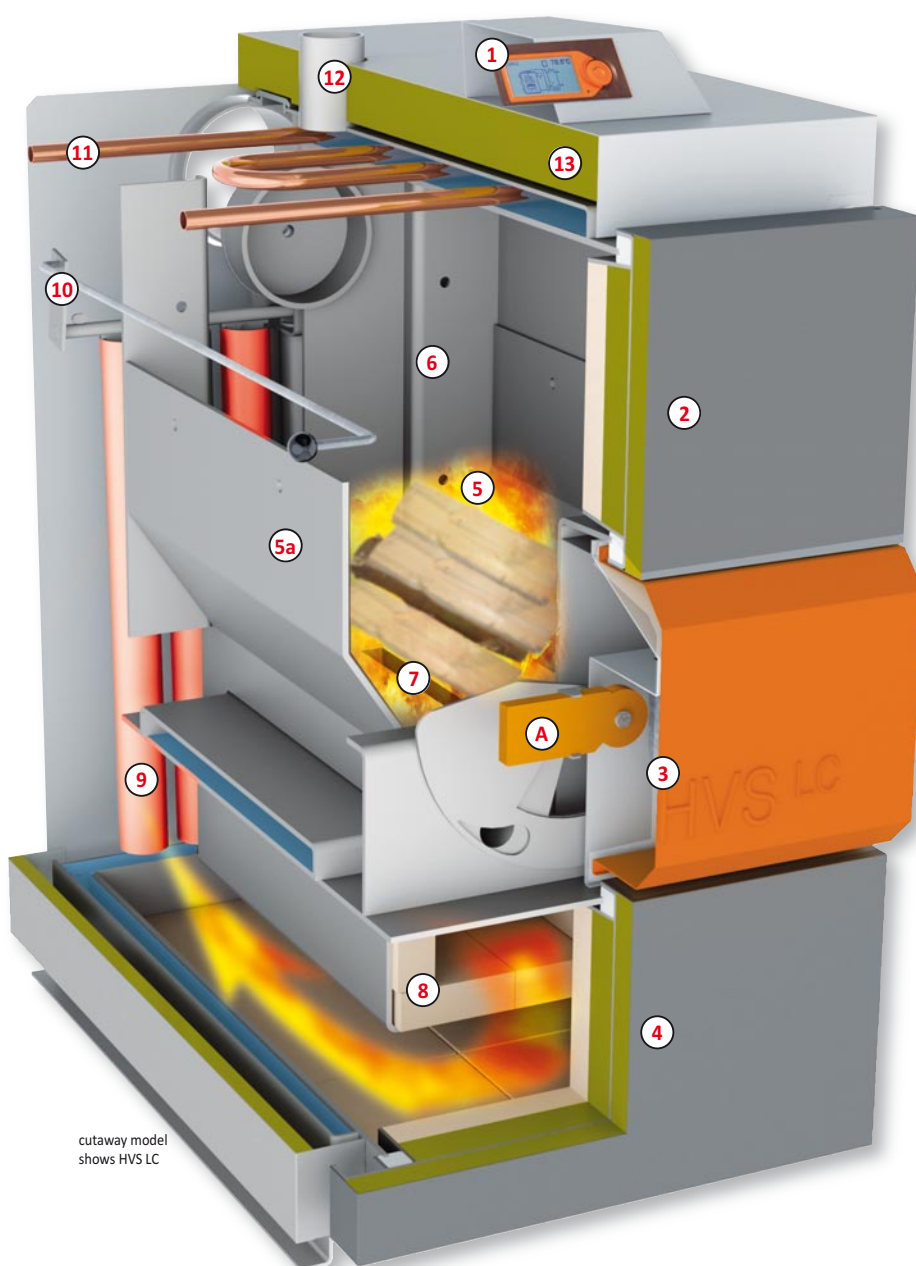
Graphic display with pre-defined Solarbayer hydraulic scheme.

Exhaust gas temperature, boiler temperature and buffer tank temperature control.

With the „HVS Lambda Control“ boiler the function „lambda control“ is activated.



complete combustion of the wood gases in the lower combustion chamber



cutaway model shows HVS LC

Gelungene Detaillösungen

- 1 control unit**
graphic display with permanent presentation of the system's operating status
- 2 fuel chamber door**
large-size fuel chamber door
- 3 forced draft fan**
the quantity of air, necessary for a perfect combustion is supplied by the infinitely variable forced draft fan, equipped as standard
- 4 bottom door**
cleaning door for the removal of ash
- 5 fuel chamber**
large fuel chamber (0,5 up to 1 meter logs depending on boiler size)
- 5a conical fuel chamber walls**
for a steady inlet of embers to the ceramic nozzle
- 6 primary air duct**
pre-heated primary air is lead into the fuel chamber by the rear air duct
- 7 ceramic nozzle with secondary air duct**
creates the perfect gas mixture and guarantees a clean downward wood gas flame
- 8 slide-in combustion chamber**
with high temperature resistant fire-clay bricks for a complete burnout of the wood gases with a minimum of ash
- 9 exhaust gas heat exchanger with turbulators**
for best possible hand-over of exhaust gas heat to the heating water
- 10 start-up flap with draft-bar**
prevents outlet of flue gas when refueling the boiler
- 11 safety heat exchanger**
for cooling down in case of overheating
- 12 boiler flow-line**
- 13 high quality insulation**

A Lambda actuator (only series HVS Lambda Control)
The secondary air is adjusted by the lambda sensor via a servo motor, depending on the emission values. With the boiler series HVS E (without lambda control) the secondary air is adjusted via regulating screws.

*only with HVS 16-40

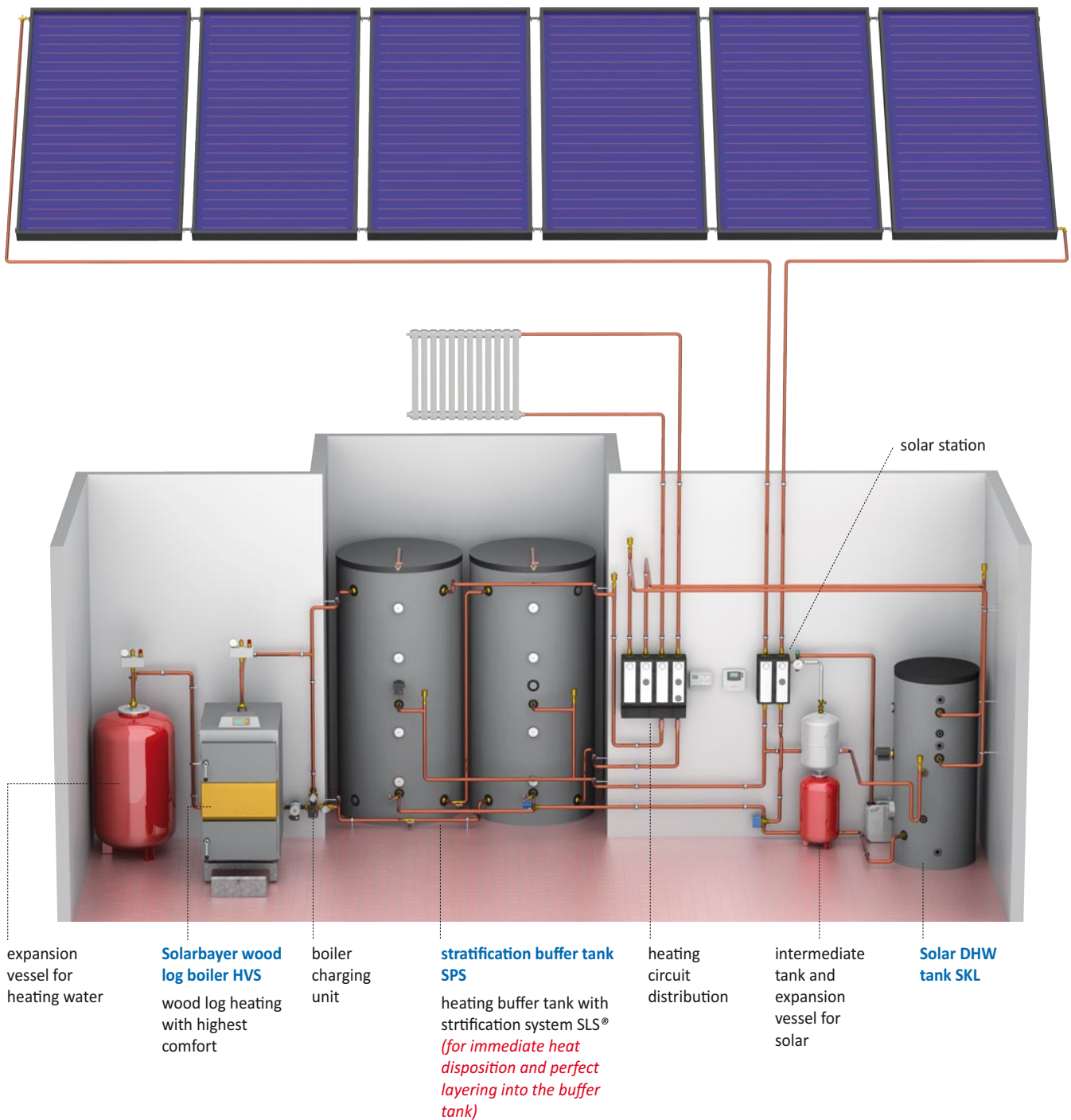
Your „comfort heating set“

Wood log heating in combination with a solar system!

Solarbayer has many years of experience in constructing and designing wood log boilers. The high quantity of sold Solarbayer wood log boilers impressively emphasizes this. The boiler series HVS Economic and HVS Lambda-Control reach best efficiency factors and low emission values.

You will have a perfect heating system with an additional solar system for backup heating. The illustration below will demonstrate how your new heating system could look like.

Example for a high efficient heating system with easy to install wood log boiler and solar system!

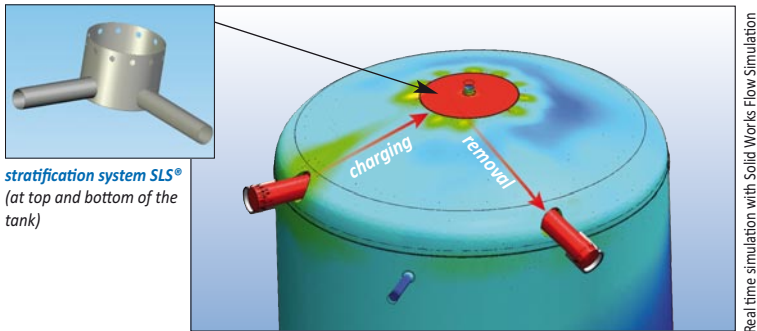


Our wood log boiler sets are always equipped with our **stratification buffer tank SPS**.

This guarantees a comfortable heating system and a fast and efficient heat conduct into your building.

Our patented stratification buffer tanks SPS with patented stratification system SLS® make the difference!

Operating mode of our *stratification buffer tanks SPS* with stratification system SLS®



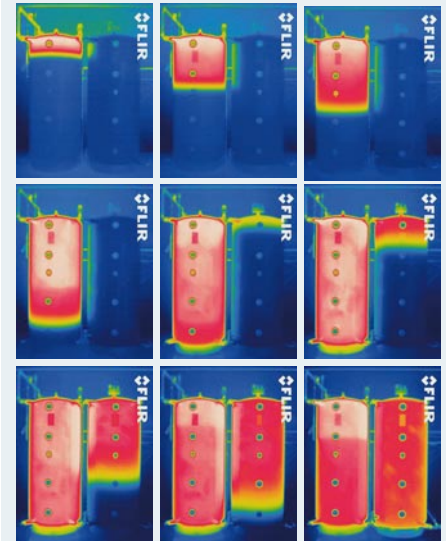
stratification system SLS®
(at top and bottom of the tank)

The charging of the Solarbayer stratification tank is lead into the stratification pot via the charging pipe. The thermal extraction starts as soon as heat is needed, through the discharge pipe into the heating system.

The heat needed is only taken out of the stratification pot and is therefore immediately ready for extraction.

The surplus of energy provided by the heat transfer medium is going to be stored in the buffer tank, perfectly layered, via the boreholes in the stratification system SLS® (as show in the pictures on the right).

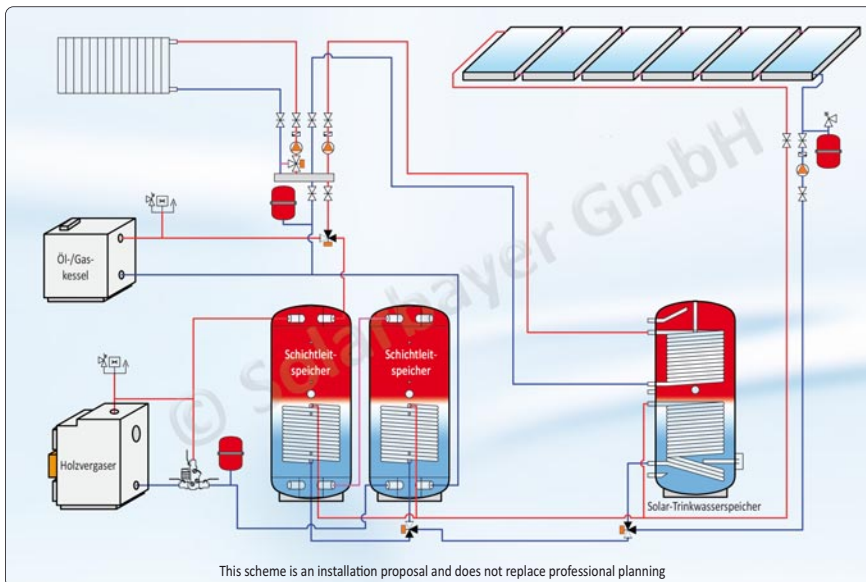
Tank charging process



The displayed time-lapse clearly demonstrates the steady allocation and stratification of thermal energy while the boiler is charged

Further information and technical specifications of all our tanks can be found in our brochure „Storage systems“ or on our homepage www.solarbayer.de

Connection example



Retrofitting an existing oil/gas heating system: heating with solar system and wood log boiler

A buffer tank volume of 55 liter per kW nominal boiler output has to be installed. In order to achieve a perfect efficiency factor we recommend to install a buffer tank volume of 70 to 100 liter per kW nominal boiler output, depending on the space conditions in your boiler room. The best possible tank for this is our stratification buffer tank SPS with integrated stratification system SLS®.

The characteristic aspects of these systems are the long refueling intervals as well as the high efficiency factor.

With this you will achieve perfect system efficiency.

Perfectly aligned sets

We have assembled complete wood log boiler sets that can be integrated in almost every object.

These sets consist of the following components:

- **Solarbayer gasifying wood log boiler**
two different types are available:
 - HVS Economic [without lambda control]
 - HVS Lambda Control [with lambda control]
- **boiler charging unit**
with boiler circuit pump and shut-off device
- **thermal discharge safety valve (¾")**
with sensor and immersion sleeve
- **patented stratification buffer tank SPS**
with integrated stratification system SLS®
(one of the most efficient systems on the market)
- **membrane expansion vessel**
suitable for the particular buffer tank size
- **cap valve for expansion vessel**
with shut-off device, connection and draining
- **boiler safety unit**
with bleeder, manometer and safety valve
- **detailed instruction manual**
with technical description and installation instruction

Suitable wood log boiler and solar sets can be found in the pricelist and on our homepage www.solarbayer.de

Calculation example for dimensioning the wood log boiler

Please note that with solid fuel boilers the specified output is guaranteed under full load only. You heat up the boiler and it will take about 30 minutes until the boiler will operate with its maximum output. The stated output will last for approximately 2,5 hrs. Now the burn-off period begins for about an hour with decreased performance. The firebed remaining in the combustion chamber will post-heat for about an hour. Afterwards the combustible is completely used up.

For an easier calculation we presume a burning period of approximately 4 hrs (at nominal output).

Note: This is imperative for the rating of the boiler to avoid that the boiler output is rated too weak

Rough estimation of the boiler size by means of living space:

Example: building (new building) with 150 m² living area, desired boiler size HVS 25 kW

Required heat output per m² living area:

old building	0,12 Kilowatt per m ²
new building	0,08 Kilowatt per m²
low energy building	0,05 Kilowatt per m ²

Required heat output of the building (at an outside temperature of –16°C)

e. g. living area 150 m², new building => 0,08 kW je m²

$$150 \text{ m}^2 \times 0,08 \text{ kW per m}^2 = \underline{12 \text{ kW}}$$

The heat requirement of the new building with an outside temperature of –16°C is thus 12 kW.

Calculation of the building's daily heat requirement (with an outside temperature of –16°C):

$$24 \text{ Std.} \times 12 \text{ kW} = \underline{288 \text{ kWh}}$$

The necessary heat energy with an outside temperature of –16°C is 288 kWh/day.

Calculation of the required heat energy per filling (example HVS 25 kW):

$$25 \text{ kW} \times 4 \text{ hrs. (equivalent full load burning period)} = \underline{100 \text{ kWh}}$$

The burn-off energy of the 25 kW boiler in 4 hrs full load is thus approx. 100 kWh.

Estimation of the daily fillings (with an outside temperature of –16°C):

$$288 \text{ kWh} : 100 \text{ kWh (burn-off energy)} \approx \underline{3 \text{ boiler fillings}}$$

With an outside temperature of –16°C the boiler has to be filled approx. 3x in order to guarantee the required energy demand of the building. With milder temperatures you have less fillings.

This calculation is for general information only and does not replace professional planning!

* If the boiler is dimensioned too small you will achieve a boiler temperature of 70 – 80 °C but the desired heating flow line temperature is not achieved.

[e.g. building size 220 m² (old building): a desired nominal boiler output of 25 kW would be miscalculated. Correct would be a nominal boiler output of 40-60 kW].

Ihr Fachhändler berät Sie gerne: