

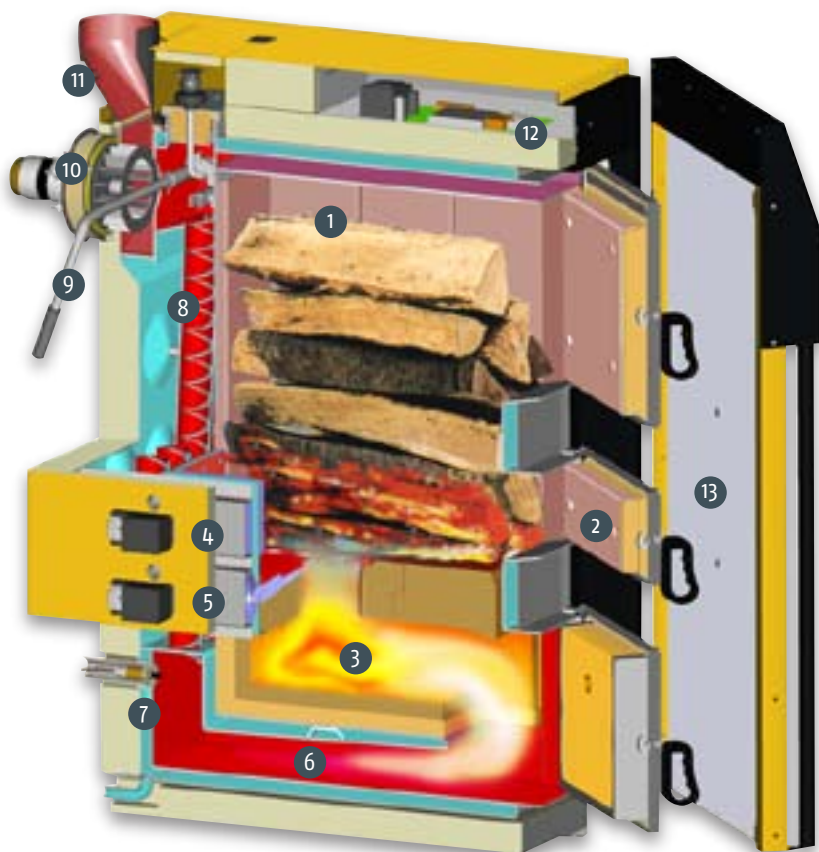


Wood Gasification Boilers
ETA SH 20-60 kW



A Passion for Perfection.

Perfection of a Proven Concept



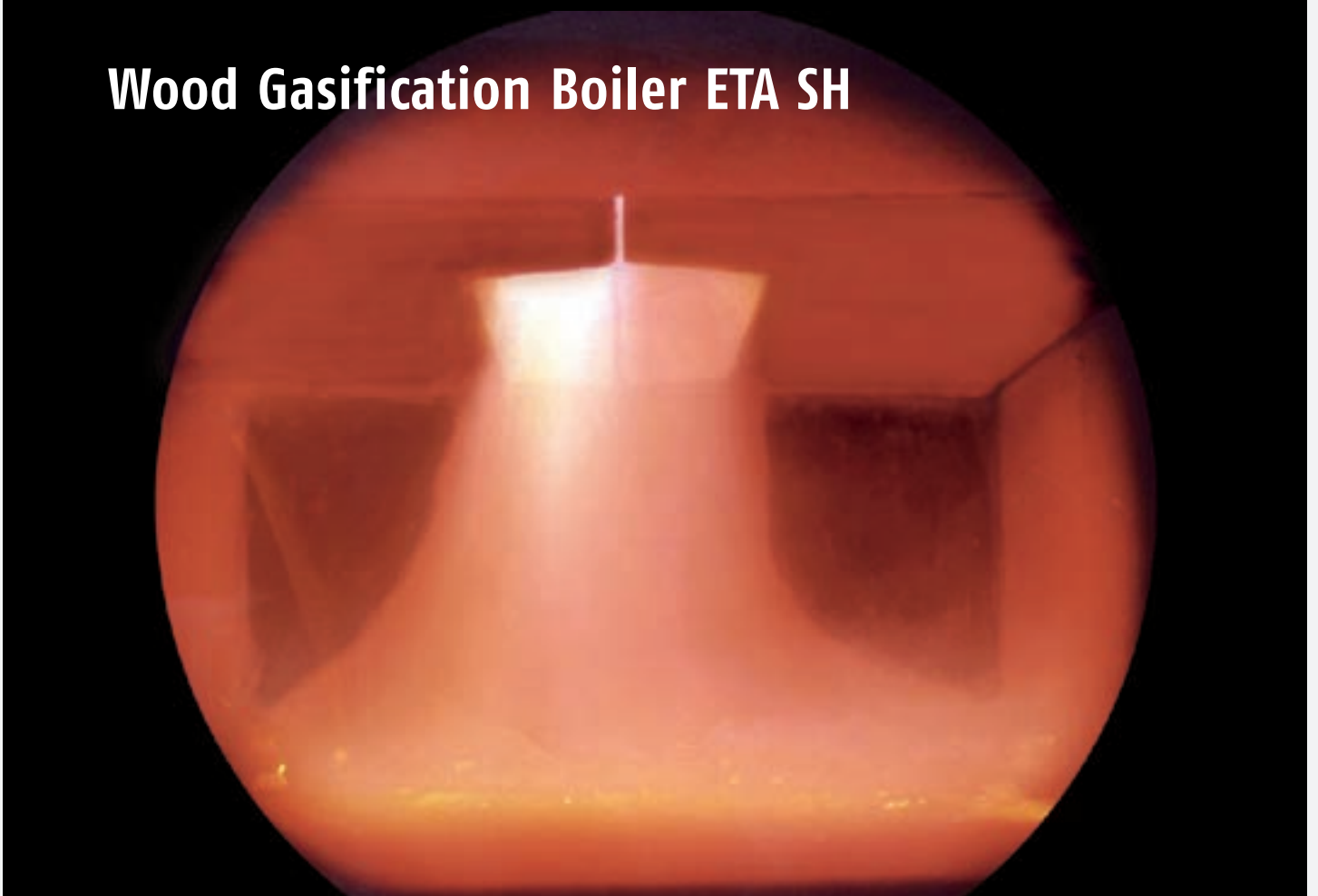
- 1) **LARGE FUEL FILLING SPACE:** 56cm deep to take 1/2m logs, fuel capacity of 150 litres in the SH 20/30 models and 225 litres in the SH 40/50/60 models means that refuelling intervals kept to a maximum.
- 2) **INSULATED GLOW ZONE CHAMBER** from high temperature-resistant fire bricks for optimal partial load operation and burn out with minimum ash accumulation.
- 3) **LAMBDA SENSOR:** The SH boiler uses a lambda probe to continuously monitor exhaust O_2 content, allowing automatic air induction adjustment and ensuring high efficiency for all kinds of wood (beech, spruce, poplar).
- 4) **COMPLETE REGULATON** for boiler, accumulator tank, hot water tank and heating pumps. All functions can be monitored real time and adjusted as required on a four line easy-to-read display at the front door. Optionally weather-compensated temperature regulation for the heating circuits or control of solar collectors can be integrated to the boiler heat management system.

- 5) **RE-LIGHT WITHOUT MATCHES** by ember preservation (can be switched off for ash removal). If no embers are present then problem-free lighting is done through the middle door.
- 6) **SMOKE SUCTION** prevents smoke effusion when filling wood.
- 7) **PRIMARY AND SECONDARY AIR ACTUATORS** with position feedback to control panel.
- 8) **SILENT DRAFT FAN:** The boiler has a barely audible, variable speed exhaust fan with RPM feedback to the control panel. Low electrical power consumption of the motor (only 76W)
- 9) **STEP-LESS ADJUSTMENT OF THE EXHAUST GAS TEMPERATURE** with exhaust gas temperature sensor for adapting to the existing chimney.
- 10) **SIMPLE ASH REMOVAL** from the front, no side doors.
- 11) **EASY CLEANING:** Cleaning the heat exchanger is the easiest of tasks, just pull the cleaning lever on the outside a couple of times (activates turbulators in the exchanger pipes).
- 12) **MINIMAL HEAT LOSS:** The boiler sucks the combustion air from behind the insulation door. In this way the calorific losses from the boiler are used for preliminary air heating. Compact thermal insulated cabinet, includes ground insulation, means only 0.78%



With the approval tests by the **BLT Wieselburg** (Austria) and the **TUEV South Germany** the **ETA SH** with lowest pollutant values and highest efficiency levels qualified itself clearly as one of the best boilers in its class.

Wood Gasification Boiler ETA SH



Easy

Refilling the **ETA SH** is a very easy task. It must only be filled with wood!! Refilled wood ignites automatically with the remaining embers from the last firing phase. You light the fire manually the first time and the boiler will keep enough embers to relight the fire for 24 hours (depending on wood type). When the doors are closed the automatic heating operation begins.

Due to the large fuel chamber up to half-meter logs are possible, you only have to refuel once or twice a day depending on temperature. A smoke suction device over the top door prevents either smoke or smell escaping from the boiler out in the room during refilling.

Due to a complete burn out of wood in the burning chamber (depending on the type of wood) it is only necessary to remove ashes only once every 1-2 weeks. With a short couple of pulls on the cleaning lever you shake the cleaning turbulators built into the heat exchanger pipes. A clean boiler operates with better efficiency.

Pleasantly

Indulge yourself and the boiler with an accumulator tank. Then the ETA heat management system holds warmth over night, in the morning you will have a warm house and hot water before having to refuel the boiler, you even have time to enjoy breakfast...



Regulated

Each **ETA SH** is delivered with a complete heat management system for boilers, accumulator tank, hot water tank and heating pumps.



There's no need to worry about complex electronics. Once the settings for the boiler have set up, information about its current status is given in the four-line text display panel. If you want to change the heating time settings, an easy-to-follow information text takes you through the procedure.

Better

For the first time ever it is now possible to burn all forms of wood in the same boiler, it doesn't matter if it is Ash, Spruce, Beech, Wood Briquettes or even waste carpentry timber.

The **ETA SH** boiler can burn all of these woods efficiently while at the same time keeping its emissions within the boundaries of the magical carbon monoxide (CO) limit of 100mg/MJ. This magical figure is achieved through the use of the lambda sensor; the probe measures the remaining oxygen in the boiler's exhaust gases continuously and then the electronic boiler control regulates the primary and secondary air induction to match so that the boiler is always operating at the optimum level of efficiency.

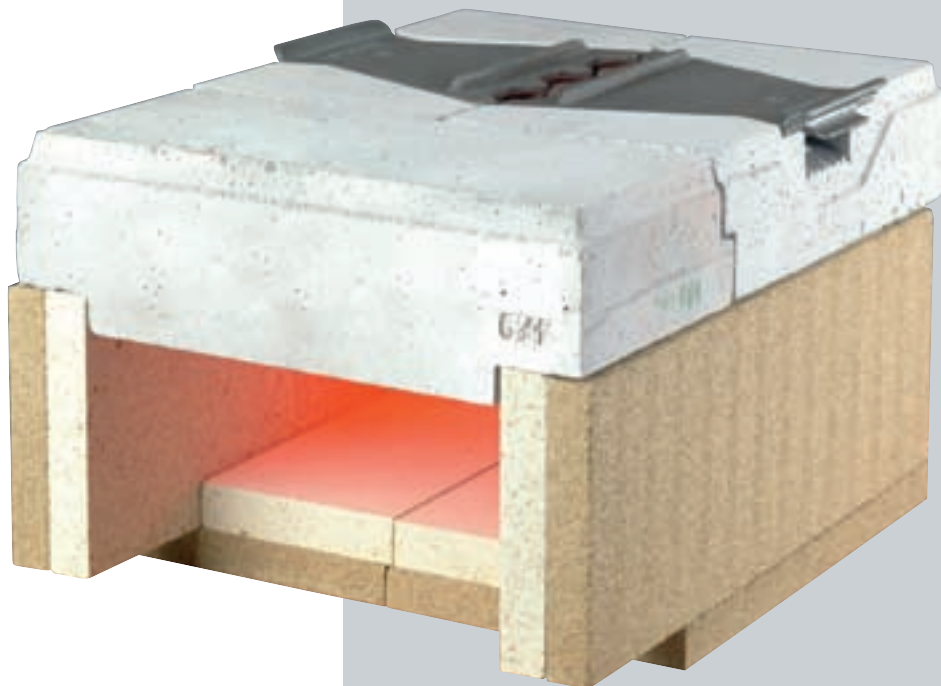
In addition this system also makes sure that not too much air enters the burning process, surplus air would draw heat from the boiler out in the chimney and thus reduce efficiency.

Steadily

High efficiency is the sum of innumerable details. For example, the additional insulating door. Combustion air is drawn along the gap between the outer insulation door and inner fire doors. Thus the thermal radiation of the boiler doors is led back with the air into the boiler.

Glowing

Since no high excess of air cools the fire, as a result the fire in the ETA Glow Zone burns between 1000 and 1200°C. Conventional combustion chambers do not have the durability to withstand such heat. Therefore the ETA Glow Zone Chamber is made from a stable high temperature ceramic material built up from several parts with expansion joints.



Complete

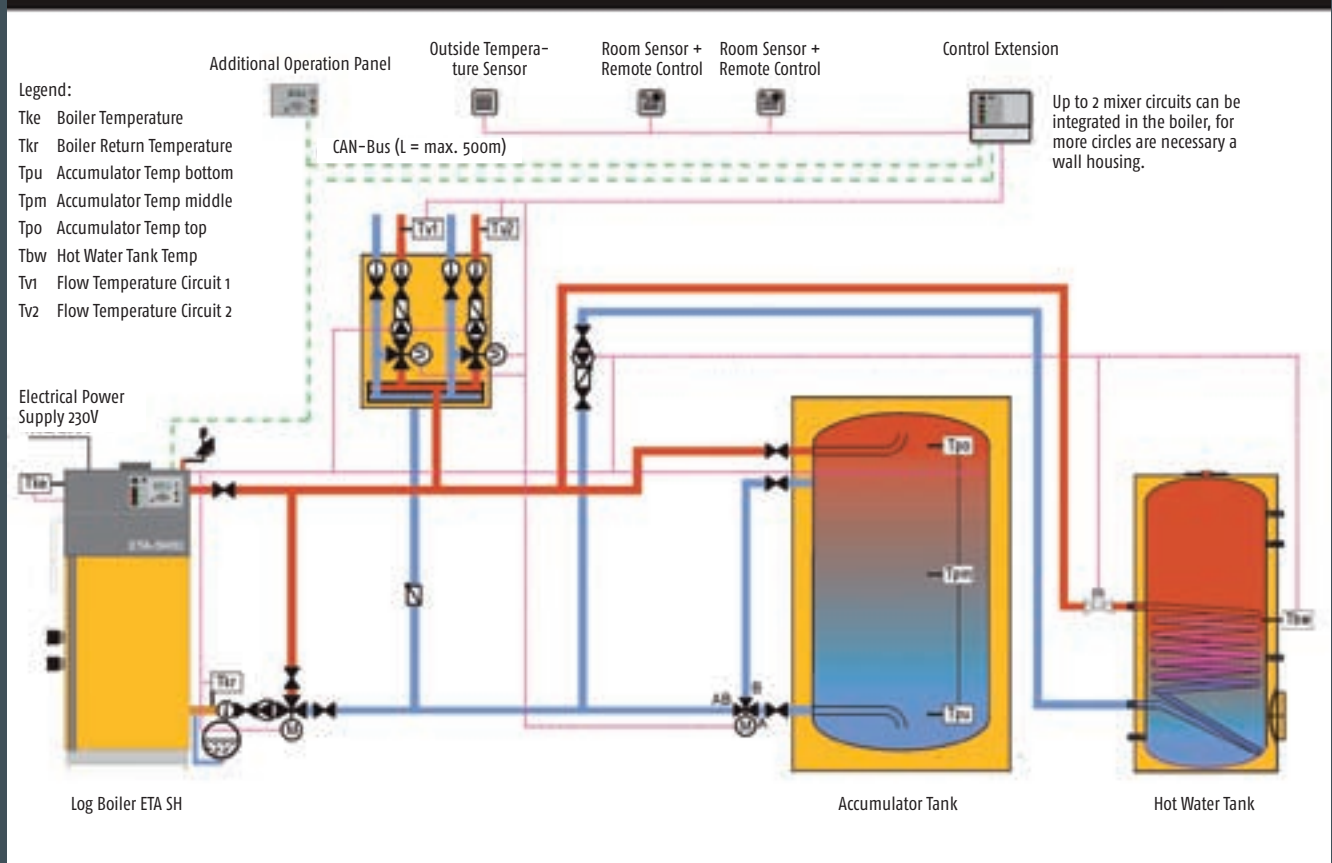
At no extra cost ETA Heat Management System is equipped with Start Relief Feature (uncouple cold accumulator tank for heating up the house faster) or to handle an auxiliary boiler such as oil or gas.

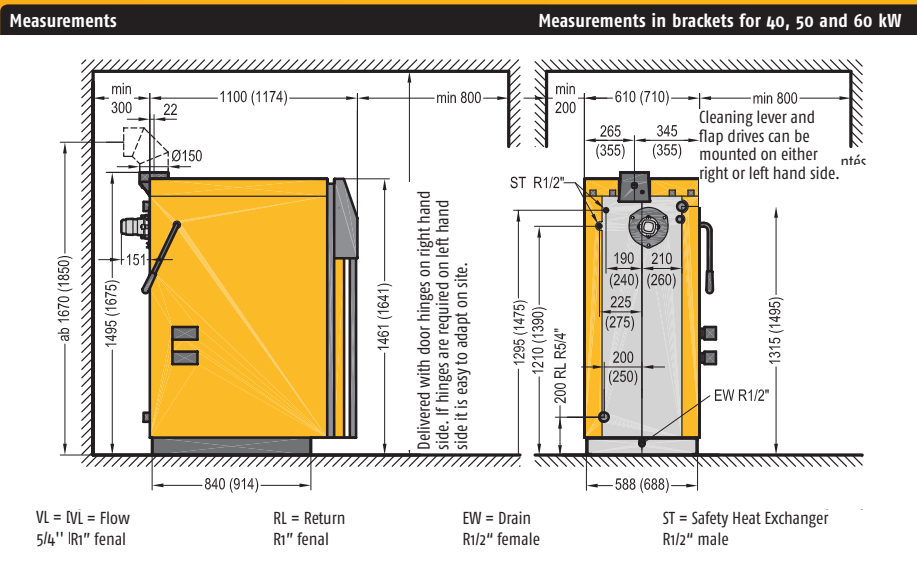
Available as optional extra only, a weather compensated control for the heating circuits and/or the solar control. All components of an ETA heat managed system such as boiler, accumulator tank, hot water tank, radiators and/or under-floor heating, auxiliary boiler and solar collector can be monitored real time and adjusted as required through the control panel and operate seamlessly in a combined heating relationship with the ETA boiler.

Regulated

- Power control via air valves and variable exhaust fan speed depending on the temperatures of boiler, accumulator tank and exhaust gas.
- Combustion control with lambda sensor
- Ember preservation for heating up without matches (can be switched off for ash removal)
- Accumulator tank management with a variable speed loading pump
- Hot water tank loading that can be setup on a timer
- Return rise (mixer or variable speed pump) with utilization of the remaining boiler heat at the end of each firing cycle
- Two heat circuits with a timer program
- Monitoring of draught fan speed, air valve positions, lambda sensor, temperature safety device, fuses, etc... with references and message displayed in plain language
- Pumps and draught fan can be manually operated by On-Off-Auto switches
- Able to communicate through CAN bus to external control components, e.g. weather compensated heating circuit extensions or remote control panel in your house

One Control for Your Whole Heating System





Technical Data

ETA SH		20	30	40	50	60
Rated capacity	kW	10-20	10-30	20-40	20-50	20-60
Efficiency partial/full load - logs hornbeam *	%	92,7 / 91,5	92,7 / 90,1	93,6 / 92,5	93,6 / 91,9	93,6 / 91,3
Fuel chamber depth		560 mm deep for 12m logs		340 x 365 mm opening		
Fuel chamber content	Litre	150		232		
Burning-time logs hornbeam partial/full load	h	17,6 / 8,8	17,6 / 5,9	14,1 / 7,1	14,1 / 5,6	14,1 / 4,7
Dimensions without casing B x T x H	mm	588 x 940 x 1495		688 x 1015 x 1675		
Weight	kg	625	630	745	748	750
Water volume	Litre	110		170		
Water flow resistance (ΔT=20°)	Pa / mWS	100 / 0,010	220 / 0,022	220 / 0,022	340 / 0,034	480 / 0,048
Exhaust gas mass flow rate partial/full load	g/s	6,6 / 12,5	6,6 / 19,1	12,2 / 24,0	12,2 / 30,2	12,2 / 35,4
CO ₂ -content in dry exhaust gas partial/full load	%	13 / 14	13 / 14	14 / 14,5	14 / 14,5	14 / 15
Exhaust temperature partial/full load *	°C	85 / 150	85 / 160	90 / 145	90 / 150	90 / 160
Chimney draught		2 Pa at partial load / 5 Pa at full load required up to 30 Pa no draught limiter required				
Emissions carbon monoxide (CO)	mg/MJ	119 / 72		120 / 30		
Logs hornbeam partial/full load *	mg/m ³ 13%O ₂	178 / 108		183 / 46		
Electrical Power Consumption *	W	86		87		
Recommended Accumulator Tank content	Litre	min. 1.000, opt. 1.500		minimal 1.500, optimal 3.000		
Max. permitted operating pressure	3 bar	Boiler classification		3 according to EN 303-5		
Range of setting for flow temperature	70 - 85°C	Tested fuels		Logs spruce and hornbeam until to W20, wood briquettes		
Max. permitted operating temperature	95°C	Power Supply		1 x 230V / 50Hz / 3A		
Min. return temperature	60°C					

* Results taken from test report by the BLT Wieselburg, Protocol-number 028/99 and 007/00. Reports of the Testing centre at BLT Wieselburg are available via Internet: blt.josephinum.at (Deutsch > Biomasse > Heizkesselprüfungen > Stückholzkessel)

ETA SH



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