

We provide ewergy for life!

Technology and planning
KWB CLASSICFIRE

Log-wood heating

valid as of March 2014

U.A.A.

KWB CLASSICFIRE Log-wood heating system 20–50 kW

Reliable and traditional heating

www.kwb.net

KWB

CLASSICFIRE

Valuable Partnership

ore than 2,000 installers and more than 60,000 customers put their trust in us by deciding in favour of a KWB partnership. This "valuable asset" is also an integral component of our company philosophy and the basis of our business relationships. In addition, KWB focuses on appreciation, reliability and a large amount of responsibility vis-à-vis our environment and future generations. This I guarantee personally and this is also symbolised by KWB's trademark: the tree of life.



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KWB stands for power and heat from biomass and is **synonymous** with innovative **biomass heating systems**. It developed, for example, the first **wood chip heating system** with a **fully automatic heat exchanger cleaning** and has submitted a multitude of patent applications. 2006 the **largest** private **research** and **development centre** for biomass in Europe was established at the company's main location in Austria. What else speaks for a partnership?

97% of our customers recommend KWB to others

According to recent customer surveys, 97 % of all KWB customers recommend the company KWB and its products to others. Satisfied customers are the highest praise for a company – a priceless token of trust!

Noticeable benefits through product development

When working on the further development of the KWB product line, our main focus is on the tangible and noticeable benefits for the partner and end customer with a high functional safety, while presupposing a high quality and robust high-tech product.

Safety *because of our award-winning service*

Availability, flexibility, proximity to our customers are customer service requirements that must be met. KWB's own factory customer service exceeds these expectations and has received several related awards.

Time savings through effortless comfort

Thanks to our close partnership with installers and design companies, a large amount of valuable experience contributes to the product development and guarantees the highest possible installation and operating comfort, which helps save what is most valuable to us: time.





RELIABLE AND TRADITIONAL HEATING

The **KWB Classicfire**, with a burning time of up to 20 hours, combines the advantages of traditional wood heating with the comfort of modern heating systems in an ideal way. Thanks to the different capacities ranging from 20kW to 50kW, it is suitable for single family homes and duplexes as well as for agricultural companies.













Control system KWB Comfort 3

2-button control with dial and an easy to understand graphic display

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Easy operation

Easy control of the heating system via SMS (text message) with the KWB Comfort SMS and of the solar heating system with the KWB Comfort Solar.

Fill area

Large fill door, spacious combustion chamber, long burning time

High temperature circulation combustion chamber

ceramic-lined combustion chamber, fly ash separation



Convenient

High level of operating convenience when heating, wood logs of up to 55 cm possible, long burning time of up to 20 hours as well as carbonization gas removal.

EASY OPERATION

KWB Comfort 3 microprocessor control system

KWB Comfort 3 is a **modular system** that is used to operate and regulate KWB biomass heating systems.

All adjustments can be made using the 2-button control unit together with a dial on the innovative easy to understand graphic display. Parameters for boiler, heating circuit, DHWC, and buffer tank can be easily configured using the logically structured menu system. The control unit adjusts boiler output according to heat demand, fully automatically and infinitely variable from standby to full load. The control concept ensures optimum combustion conditions, lowest emissions and maximum economic efficiency.

In addition to regulating the burner, it also provides comprehensive heat management – from a single-family house to a district heating network. As a modular, expandable system, the KWB Comfort 3 makes it possible to control up to 32 heating circuits, 16 buffer tanks and 16 DHWCs.

It is also possible to link several digital or analogue remote-control devices.

The control unit consists of the following components:



Base board

Contains all inputs/outputs for boiler control, incl. sensors and terminal strip for external connections. The master board also includes the activation for one DHWC and one buffer tank with two temperature sensors.



Boiler control unit

This module is used to operate and regulate the boiler and for heat management purposes. In addition, the boiler control unit can be used as a data display, room thermometer and remote-control unit.



Heating circuit expansion module

Controls a max. of 2 heating circuits, one DHWC and one buffer tank (with 2 sensors) per module. Operation and monitoring are carried out using the boiler control unit or optionally by digital remote control devices.



Analogue remote control unit

Easy operation for a heating circuit with room sensor consisting of a dial for adjusting the desired room temperature by ± 5 °C and a 4-position slide switch for selecting the heating program: automatic mode, lower mode, frost protection mode or day operation.



Digital remote control unit

Enables operation of one or more heating circuits with room sensor as well as configuration and monitoring of heating circuit, DHWC and buffer tank management from the living room.



KWB Comfort Solar

Through the KWB Comfort Solar control system, the heating system is controlled in such a manner that free-of-charge solar energy is optimally routed into the buffer tank. In addition to functionality and design, the solar control system features an easy-to-use and self-explanatory user interface. A convenient commissioning wizard is available for the heating engineer.

INSTALLATION EXAMPLE/ **CONNECTING DIMENSIONS**

Type 20–30 kW and Type 40–50 kW

Ground plan

Chimney ø 16 (20 and 30 kW), Chimney ø 18 (40 and 50 kW), smoke tubeø 15, The smoke tube must be sealed tightly



Connecting dimensions 20–30 kW

Height, exhaust pipe connection incl. bend: 175 cm

Connecting dimensions 40–50 kW

Ground plan

(33,5) + (33,5)

Height, exhaust pipe connection incl. bend: 185 cm



Legend

A	Emergency stop switch: Boiler NOT de-energised, but combustion stopped – heat dissipation continues!
Al	Connection forward flow 6/4"
A2	Connection return flow 6/4"
Е	Filling or emptying 1⁄2"
F	Fire extinguisher
т	Thermal safety valve 1/2"
R	Smoke pipe/chimney 150/180*



Outline

Boiler dimensions

Boiler dimensions for boiler installation in cm **Boiler type** Non-dismantled Dismantled SHV 20 80x145 60 x 134 80 x 145 60 x 134 **SHV 30** SHV 40 90 x 155 70 x 144 90 x 155 **SHV 50** 70 x 144

*Recommended

REI90 according to ÖNORM EN 13501, El, 30-C according to ÖNORM EN 13501, E30 according to ÖNORM EN 13501

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TECHNICAL SPECIFICATIONS

SHV	Unit	20	30 ***	30	40 ***	50
Rated power	kW	20,0	27,0	30,0	40,0	50,0
Partial load	kW	14,0	14,0	14,0	19,5	25,0
Boiler efficiency at rated power	%	93,7	91,5	90,6	90,4	90,2
Boiler efficiency at partial load	%	84,9	84,9	84,9	88,4	91,8
Fuel thermal output at rated power	kW	21,4	29,7	33,3	44,4	55,4
Fuel thermal output at partial load	kW	16,4	16,4	16,4	21,8	27,2
Full load burn-off period	h	8,4	6,4	5,5	7,3	5,6
Boiler class according to EN 303-5:1999	-	3	3	3	3	3
Water side	I	Г				Г
Water content	I	120	120	120	190	190
Water connection, forward/return flow (internal thread)	inch mm	6/4 38,1	6/4 38,1	6/4 38,1	6/4 38,1	6/4 38,1
Water connection for filling and/or emptying (internal thread)	inch mm	1/2 12,7	1/2 12,7	1/2 12,7	1/2 12,7	1/2 12,7
Thermal safety valve: pressure	bar	2–6	2–6	2–6	2–6	2–6
Water connection for thermal safety valve (internal thread)	inch mm	1/2 12,7	1/2 12,7	1/2 12,7	1/2 12,7	1/2 12,7
Water-side resistance at 20 K **	mbar Pa	2,9 290	5,4 540	6,5 850	10,8 1080	16,9 1690
Boiler-entry temperature	°C	55	55	55	55	55
Working temperature/operating temperature	°C	85	85	85	85	85
Maximum permitted temperature	°C	95	95	95	95	95
Maximum operating pressure	bar	3	3	3	3	3
Buffer tank required	-	✓	✓	✓	✓	✓
Minimum buffer tank volume (EN 303-5)	1	1440	1024	884	1685	1680
Recommended buffer tank volume	l/kW	50-60	50-60	50-60	50–60	50-60
Exhaust-gas side (data for chimney design)						
Combustion chamber temperature	°C	900-1100	900–1100	900-1100	900–1100	900-1100
Combustion chamber pressure (unregulated)	mbar	< 0	< 0	< 0	< 0	< 0
Required draft at rated power/partial load	mbar	0,15 0,08	0,15 0,08	0,15 0,08	0,15 0,08	0,15 0,08
Induced draught required	-	✓	\checkmark	\checkmark	\checkmark	✓
Exhaust-gas temperature at rated power	°C	150,0	160,5	165,0	155,0	170,0
Exhaust-gas temperature at partial load	°C	95,0	98,5	100,0	103,0	106,0
Exhaust-gas mass flow at rated power	kg/s	0,014	0,018	0,021	0,027	0,034
Exhaust-gas mass flow at partial load	kg/s	0,009	0,009	0,009	0,013	0,016
Exhaust-gas volume at rated power	Nm³ _f /h	38	52	58	76	96
Exhaust-gas volume at partial load	Nm³ _f /h	27	27	27	36	45
Minimum chimney connection height	mm	1750	1750	1750	1850	1850
Exhaust-gas connection diameter	mm	150	150	150	150	150
Incline of the Exhaust-gas pipe	0	≥ 3	≥ 3	2 3	≥ 3	≥ 3
Recommended chimney diameter	mm	160	160	160	180	180
Chimney design: moisture-resistant	-	✓	✓	✓	✓	✓
Fuel						
Permissible fuels: log-wood (L50, M25 acc. to EN 14961-5), coarse wood chips (P100 acc. to EN 14961-4), untreated saw mill remnants						
Maximum length log-wood	cm	55	55	55	55	55
Maximum water content (fresh weight)	kg/kg WM	≤ 25	≤ 25	≤ 25	≤ 25	≤ 25
Fill area						
Fill area volume	1	140	140	140	210	210
Width of fill doors	mm	330	330	330	330	330
Height of fill doors	mm	370	370	370	370	370
Flectrical system						0.0
		230 Vac	230 Vac	230 Var	230 Var	230 Vac
Connection	-	50 Hz 10 A				
Unit switch and main switch: present	-	✓	\checkmark	\checkmark	\checkmark	✓
Connected power boiler	W	180	180	180	180	180

SHV	Unit	20	30 ***	30	40 ***	50			
Weights									
Total weight (empty)	kg	627	627	627	774	774			
Setup									
Minimum distance from wall - to the rear	mm	500	500	500	500	500			
Minimum distance from wall - to the front	mm	800	800	800	800	800			
Minimum distance from wall - on each side	mm	500	500	500	500	500			
Emissions according to test report		TGM - VA		TGM - VA	*	WB			
Test report no.	-	HL 7196	***	HL 7196	***	BLT-006/98			
O ₂ content rated power	Vol%	6,8	6,7	6,6	6,0	5,3			
O ₂ content partial load	Vol%	7,0	7,0	7,0	6,4	5,8			
CO ₂ content rated power	Vol%	13,6	13,7	13,7	14,4	15,0			
CO_2 content partial load	Vol%	13,7	13,7	13,7	14,1	14,5			
Ref. 10 % O2 dry (EN303-5)			***		***				
CO at rated power	mg/Nm³	167,0	274,1	320,0	327,0	334,0			
CO at partial load	mg/Nm ³	371,0	371,0	371,0	332,0	293,0			
NO _x at rated power	mg/Nm ³	175,9	196,9	205,9	193,9	182,0			
NO _x at partial load	mg/Nm ³	149,7	149,7	149,7	-	-			
OGC at rated power	mg/Nm ³	18,0	16,6	16,0	12,0	8,0			
OGC at partial load	mg/Nm ³	36,0	36,0	36,0	24,0	12,0			
Dust at rated power	mg/Nm ³	11,0	18,0	21,0	31,0	41,0			
Dust at partial load	mg/Nm ³	7,0	7,0	7,0	-	-			
Ref. 11 % O ₂ dry			***		***				
CO at rated power	mg/Nm³	151,8	249,2	290,9	297,3	303,6			
CO at partial load	mg/Nm ³	337,3	337,3	337,3	301,8	266,4			
NO _x at rated power	mg/Nm ³	159,9	179,0	187,2	176,3	165,5			
NO _x at partial load	mg/Nm ³	136,1	136,1	136,1	-	-			
OGC at rated power	mg/Nm ³	16,4	15,1	14,5	10,9	7,3			
OGC at partial load	mg/Nm ³	32,7	32,7	32,7	21,8	10,9			
Dust at rated power	mg/Nm ³	10,0	16,4	19,1	28,2	37,3			
Dust at partial load	mg/Nm ³	6,4	6,4	6,4	-	-			
Ref. 13 % O ₂ dry (FJ-BLT)			***		***				
CO at rated power	mg/Nm³	121,0	198,0	231,0	237,0	243,0			
CO at partial load	mg/Nm ³	268,0	268,0	268,0	240,5	213,0			
NO _x at rated power	mg/Nm ³	127,5	142,3	148,6	140,3	132,0			
NO _x at partial load	mg/Nm ³	108,2	108,2	108,2	-	-			
OGC at rated power	mg/Nm³	13,0	11,6	11,0	8,5	6,0			
OGC at partial load	mg/Nm ³	26,0	26,0	26,0	17,5	9,0			
Dust at rated power	mg/Nm ³	8,0	13,6	16,0	23,0	30,0			
Dust at partial load	mg/Nm ³	5,0	5,0	5,0	-	-			
In accordance with § 15a-BVG Austria			***		***				
CO at rated power	mg/MJ	75,0	122,6	143,0	152,0	161,0			
CO at partial load	mg/MJ	166,0	166,0	166,0	153,5	141,0			
NO _x at rated power	mg/MJ	79,0	88,1	92,0	96,0	100,0			
NO _x at partial load	mg/MJ	67,0	67,0	67,0	-	-			
OGC at rated power	mg/MJ	8,0	7,3	7,0	6,0	5,0			
OGC at partial load	mg/MJ	16,0	16,0	16,0	11,5	7,0			
Dust at rated power	mg/MJ	5,0	8,5	10,0	15,0	20,0			
Dust at partial load	mg/MJ	3,0	3,0	3,0	-	-			

28.1.2014

* ... Drawing inspection

** ... The water-side restistance is specified and determined in each case on the boiler interface (flange RF/FF)

 *** ... Values for intermediate sizes interpolated

FJ-BLT ... Franciso Josephinum Wieselburg Biomass Logistic Technology

mg/Nm³ ... Milligram per standard cubic meter (1 Nm³ under 1.013 hectopascal at 0 °C)

INFORMATION REGARDING HYDRAULICS REQUIREMENTS CAN BE DOWNLOADED AT **WWW.KWB.NET**

GENERAL CONSTRUCTIONAL CONDITIONS

Please always comply with local statutory submission, construction and execution regulations that apply to you as a KWB system user! You can obtain these regulations, for example, from the architect or competent authorities. Adherence to and verification of the local statutory regulations is a precondition for our warranties and for your insurance coverage. KWB does not accept any liability, nor does it offer any warranties for any type of constructional measures. Proper execution of constructional measures is the sole responsibility of the system owner. Your contractor or your architect will be able to advise you in this regard! As a biomass heating system user, you may be entitled to receive specific regional subsidies. Inquire promptly about time limits and procedures for handling subsidy applications. Comply with the dimension specifications in the installation examples and technical specifications. Without claim to an exhaustive treatment of the issue at hand and without suspension of any conditions imposed by the authorities.

Boiler room

Concrete floor, rough or tiled. All materials for floors, walls, ceiling must be fire resistant in REI90*; boiler room door must open in escape direction and is to be executed as an automatic closing fire door El_230 -C*; connecting door to the fuel storage room must be automatically closing El_230 -C*. Boiler room window non-opening E30*; non-closing intake air opening 5 cm² per kW rated power of heating system, but no less than 400 cm². The supply air ducting must be routed directly into the open; if it crosses other rooms, the air duct must feature an I90* envelope; a protective grille with a mesh width <5 mm must be fitted on the outside of ventilation openings to the outside.

Permanently installed lighting and electrical supply to the heating system; light and labelled stop switch of the heating system in an easily accessible location outside the boiler room in the vicinity of the boiler room door. A portable fire extinguisher (12 kg fill weight; EN 3) must be installed outside the boiler room near the boiler room door. The boiler room as well as water lines and district heating pipes must be frost resistant. No storage of flammable materials in the boiler room; no direct connection to rooms where flammable gases or liquids (garage) are stored.

Chimney

Due to the high KWB boiler efficiency, the chimney design should be resistant to moisture. A moisture-resistant chimney design means that there will be no moisture penetration or damage to the brickwork even though the temperature level in the exhaust gas path is permanently below the exhaust gas dew point (see DIN 18160)! The approximate values for the chimney diameter are stated in the specifications. These apply to the respective size of the system based on the average constructional conditions, meaning: effective chimney height 8–10 m, 1.5 m smoke tube length, 2 segment bends at 90° each, 1 contraction, 1 T connection at 90°. Comply with the specifications in the cross-section diagrams provided by the chimney manufacturer. If conditions differ or are less favourable in terms of space, it is necessary to carry out a chimney calculation according to DIN 4705. A data entry sheet in electronic format is available from KWB. Upon request, KWB will provide the chimney calculation based on the information provided on the form. This is a chargeable service. The local expert for these issues is your responsible chimney sweep. It is advisable to involve your chimney sweep during the planning phase as he is the one who will have to issue the acceptance certificate for the exhaust gas system.

Smoke pipe connection on the chimney

If not already required by local regulations, we recommend that a draft limiter and a blowback flap be built into the smoke tube, or chimney side wall, and arranged in such a manner as to exclude any danger to persons. Keep the smoke tube as short as possible. The smoke tube must be insulated and connected, and should at least ascend slightly towards the chimney, preferably with an inclination of less than 45°. The smoke tube should be thermally insulated and feature suitable, easily accessible cleaning openings. The chimney connection should be 20 mm larger than the smoke tube diameter. In this way, it is possible to integrate a suitable acoustic transmission decoupler between the smoke tube and the chimney. The KWB system is by default equipped with an induced draught fan.

Electrical connection

Connection to the mains supply is executed via the main switch of the boiler and must be installed according to regulations (according to EN 60204-1 Electrical installation of machinery – general requirements). Single-phase mains connection: $230 V_{AC}$, 50 Hz, fuse 10 A.

Required connections on the customer side: supply 3-pole (L/N/PE) 10A, with fault current protection switch and lighting arrester at the house distribution board (recommended as lighting protection), emergency stop escape switch ("Stop Escape").

Water connection

With respect to the condition of the boiler water, VDI 2035 and ÖNORM H 5195 TI and T2 must be complied with, otherwise there is risk of corrosion, which may void the warranty.

Bus system – conditions

 Bus cable: CAT.5e, S/FTP; 4×2×AWG24, length max. 850m; for underground installation: CAT.5e, 4×2×2×0.5 mm².

- Laid out in a separate conduit (not together with $230\,/\,400\,V_{AC}$).
- Network stations in one line (no branches, no ring).
- If the boiler control unit in the boiler room is used, it is necessary to install an empty base with a bus connector CAT.5e (not possible in combination with the KWB Comfort SMS).
- A max. of 2 digital remote control units after a heating circuit expansion module or heating-system master board are supplied with voltage. Each heating circuit module must be powered with 230V and 50Hz mains voltage for the heating circuit module itself and for any connected DRCUs, pumps and mixer servomotors.
- For each heating circuit, an analogue room control unit (ARCU) (no bus station) can be used independent of the bus stations. Wiring is the same as for a room sensor.

GUARANTEES AND WARRANTIES FROM WARRANTY TO FULL GUARANTEE



Our standards



Guarantee for heat exchanger



Spare part delivery guarantee

Our supplemental packages



Maintenance agreement



- **Cost savings** as compared to individual maintenance
- ✓ We will remind you annually



Guarantee Pass



On all spare/ wearing parts

 Service during replacement of spare/wearing parts free of charge as part of maintenance



Full maintenance



KWB THE BIOMASS HEATING SYSTEM

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As of: January 2014, Subject to changes and to typographical and printing errors.

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