Description:

The PYRTEC Boiler Plant combines in optimum fashion the advantages of underfeed firing with the advantages of grate firing. With its tried and trusted burner trough, drop-type external grate and travelling burn-out grate, outstanding controllability of output and maximum safety against burn-back are obtained along with automatic de-ashing of the furnace. This triple-phase firing system enables all-purpose use of the boiler plant from dry pellets (W5) (with flue gas recirculation system, see Accessories) to wet forest wood chips (W50).
This boiler plant has been inspected and approved in accordance with the latest quality criteria following EN 303-5 heating boiler for solid fuels, the CE certification as per European Machinery Directive 98/37/EC, with continuous quality control by TÜV and consists of:

FEED AUGER WITH ISOLATING LAYER:
A solid and heat-resistant feed auger with a powerful drive moves the material to be burned over the burner trough and into the grate zone, which drops down and travels.
Situated on the conveyor pipe are the holding devices both for the electrical safeguard against burn-back and for the thermal extinguishing valve. Above the auger there is the metering container with a light barrier for setting the level for the fuel isolating layer required according to TRD 414.
The drive is carried out by a maintenance-free spur wheel back-geared motor and chain drive in a dust-tight chain guard.
Inlet flange: 220 x 220 mm
Accessories: extinguishing valve with dirt trap, extinguishing water container with holding device

FIRING BLOCK:
The solid, horizontally positioned and large-volume firing block has been optimised in terms of incineration, consists of a high-quality fireclay brick lining and is multiply insulated for the lowest possible surface temperatures. The burner trough and incineration grates are made of highly refractory cast steel (material no: 1.4823; approx. 12 mm) and are individually replaceable.
In the lower part, the primary airflow is supplied to the incineration grates via a supply air fan (or flue gas recirculation system) in an output-controlled fashion and pre-heated.
In the upper part of the firing block, the secondary airflow is blown into the gas space of the firing system by an output-controlled fan via an encircling ring with high turbulence via individually adjustable nozzles. The firebox door is solidly constructed, air-cooled and very well insulated. Opening the firebox door with solid double-knuckle hinges is an ideal solution for maintenance purposes.

BOILER:
The hot-water boiler resting on the fire block has been thoroughly optimised to provide high heat transmission and a long service life. It is possible to mount the pneumatic cleaning system in the insulated door on the front of the boiler.
Located on top of the boiler is a cover that can be walked on, which makes installation and maintenance easier and protects the thermal insulation from getting damaged.
The boiler and fire block are well insulated and attractively encased.
Max. flow temperature: 100°C
Max. operating pressure: 3.0 bar

EXAHAUST FAN:
A fan especially for wood heating systems, very quiet, motor with a solid, heat-resistant design with heat dissipation hub and spring-supported. The fan housing on the intake port rotates infinitely variably, and the blow-out nozzle is round. It is usually mounted on the exhaust gas deduster (separately priced item).

ACCESSORIES include:
- Safety heat exchanger: Built into boiler
- Counter-flange: Forward and return flow, including bolts and seal
- Cleaning utensils: Scraper for firing, cleaning brush (D 52 mm) with spring steel rod

ACCESSORIES for PYRTEC grate firing (Item KPT- …) at extra charge:

Designation	***Item***	***Text***	***Dimensions***	***Use***
Exhaust gas de-duster 240 l	*KPT-E…-2*	*7110*	*7110*	*Required (exception: pellets)*
Exhaust gas de-duster 800 l	*KPT-E…-8*	*7110*	*7110*	*Variation of 240-litre*
Preparation system for de-ashing	*KPT-AV*	*7120*	*-*	*Optional for KPT-A2-S*
De-ashing into bin, 240 l	*KPT- A2-S*	*7120*	*7010*	*Optional for KPT-AV*
De-ashing into skip 800 l	*KPT- A8-S*	*7120*	*7010*	*Variation of 240-litre*
Pneumatic cleaning system	*KPT-W…-S*	*7120*	*7010*	*Optional*
Electric ignition system	*KPT-ZG-S*	*7200*	*7010*	*not suited for > W40*
Set of displacement rods	*KPT-V…*	*7200*	*-*	*Base load boiler*
Flue gas recirculation system	*KPT-R…-S*	*7200*	*-*	*For fuels < W20*
Pyrocontrol control system	*PYR- …*	*7800*	*-*	*Required*

Technical specs:

			PYRTEC Grate Firing System			
Trade name			***530***	***720***	***950***	***1250***
Item No:			***KPT-530***	***KPT-720***	***KPT-950***	***KPT-1250***
Performance data						
Rated heat output	Q_N	*[kW]*	*530*	*720*	*950*	*1250*
Continuous output [1]	Q_D	*[kW]*	*530*	*720*	*950*	*1250*
Minimum heat output [2]	Q_{min}	*[kW]*	*132*	*180*	*238*	*312*
Heat output, W45 chips	Q_{W45}	*[kW]*	*515*	*700*	*920*	*1210*
Efficiency in operation to be performed [3]		*[%]*	*> 90*			
Maximum water content [4]		*[%]*	*W 50*			
Size of the chips [5]			*G 30 / G 50 as per ÖNORM M7133*			
Exhaust gas figures						
Mass flow rate	Q_N; W5; O_2 8%;	*[g/s]*	*297*	*404*	*532*	*700*
Volume flow	Q_N; W5; O_2 8%; 150°C	*[m³/s]*	*0.36*	*0.48*	*0.63*	*0.83*
Mass flow rate	Q_{W45}; W45; O_2 10%;	*[g/s]*	*412*	*560*	*736*	*968*
Volume flow	Q_{W45}; W 45; O_2 10%; 150°C	*[m³/s]*	*0.50*	*0.67*	*0.88*	*1.15*
Average exhaust gas temperature at Q_N [6]		*[°C]*	*160*			
Average exhaust gas temperature at Q_{min} [6]		*[°C]*	*120*			
Chimney draught required		*[Pa]*	*+-0*			
Electrical connections						
Electrical connections (Σ boiler plant)		*[kW]*	*7.02*	*8.12*	*9.35*	*11.15*
Ignition device		*[kW]*	*1.6*			
Exhaust gas fan		*[kW]*	*1.1*	*2.2*	*2.2*	*4.0*
Feed auger		*[kW]*	*1.5*	*1.5*	*2.2*	*2.2*
Primary airflow fan 1		*[kW]*	*0.3*	*0.3*	*0.48*	*0.48*
Primary airflow fan 2		*[kW]*	*0.9*			
Secondary airflow fan		*[kW]*	*1.5*	*1.5*	*1.85*	*1.85*
Grate drive unit		*[kW]*	*0.12*			
Electric power consumption at Q_N		*[kW]*	*3.57*	*4.56*	*5.17*	*6.79*
Electric power consumption at Q_{min}		*[kW]*	*2.9*	*3.71*	*4.15*	*5.47*
Heating-relevant specs						
Volume on heating gas side		*[l]*	*2280*	*2830*	*4050*	*5210*
Volume of ash container for grate ash		*[l]*	*240 / 800*			
Volume of ash container for exhaust gas de-duster		*[l]*	*240 / 800*			
Water-bearing resistance (Diff. 15 K)		*[mbar]*	*23*	*43*	*26*	*45*
Boiler water volume		*[l]*	*1444*	*1861*	*1943*	*2482*
Heating surface		*[m²]*	*42.50*	*55.50*	*74.80*	*91.00*
Test pressure		*[bar]*	*7,8*			
Maximum operating pressure		*[bar]*	*6*			
Maximum boiler temperature		*[°C]*	*100*			
Minimum return temperature		*[°C]*	*65*			
Weights						
Weight of fire block		*[kg]*	*3833*	*4665*	*5892*	*7252*
Weight of heat exchanger		*[kg]*	*1986*	*2562*	*4128*	*5431*
Weight of exhaust gas de-duster		*[kg]*	*463*	*463*	*695*	*695*
Weight of feed auger		*[kg]*	*126*	*126*	*148*	*148*
Total weight without water [7]		*[kg]*	*6802*	*8210*	*11401*	*14064*
Total weight with water [7]		*[kg]*	*8246*	*10071*	*13344*	*16546*

[1] *Continuous output:* *Output levelling out as base load boiler in continuous operation with pneumatic cleaning system (for track time, see Operating Instructions)*

[2] $Q \geq Q_{min}$: *Operation with modulated control*
$Q \leq Q_{min}$: *Low load with ON Q_{min} / ember maintenance operation*

[3] *Efficiency:* *Specification with displacement rods and flue gas recirculation system for dry fuels (W5 to W20) without flue gas recirculation system-reduced values*

[4] *Wet fuels:* *>W45 further restrictions in terms of output, efficiency and control behaviour*

[5] *Specification:* *See Spec Sheet 1010, Minimum Requirements for Wooden Fuels*

[6] *Exhaust gas temperature:* *A reduction is possible by installing the displacement rods (Q_N - 20°C; Q_{min} – 10°C)*
Other influences: *fuel water content, ash content, pneumatic cleaning system yes/no, track time (number of operating hours without cleaning) Specifications for the start of the track time (toward the end of the track time there is an increase in the exhaust gas temperature by approx. +15°C)*

[7] *Total weight:* *incl. displacement rods*

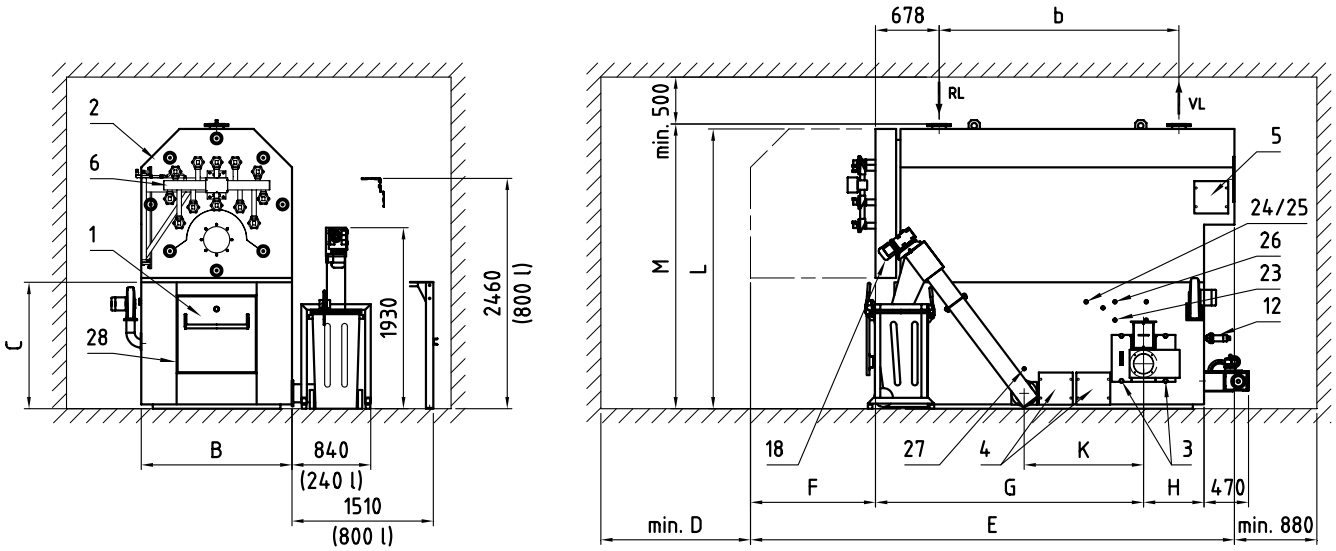
Spec Sheet

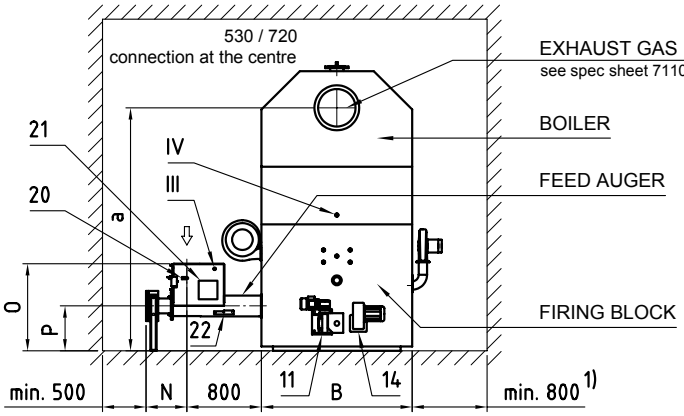
PYRTEC Grate Firing System
Boiler Plant

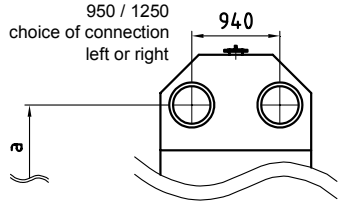
7010-3

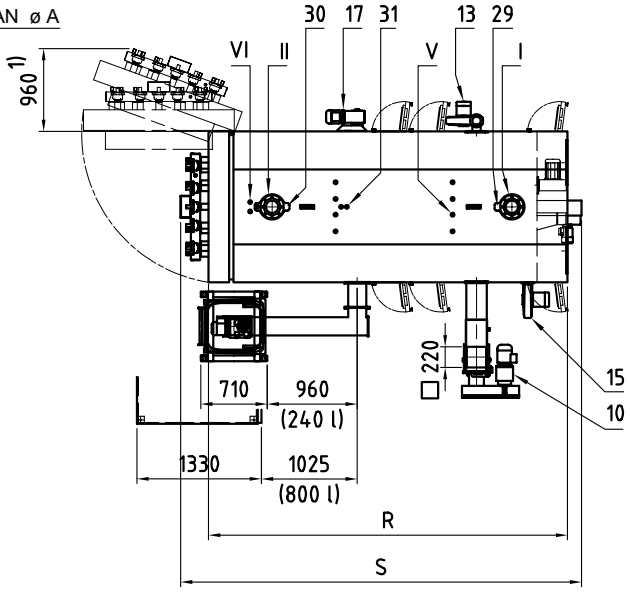
2006-02-01_E

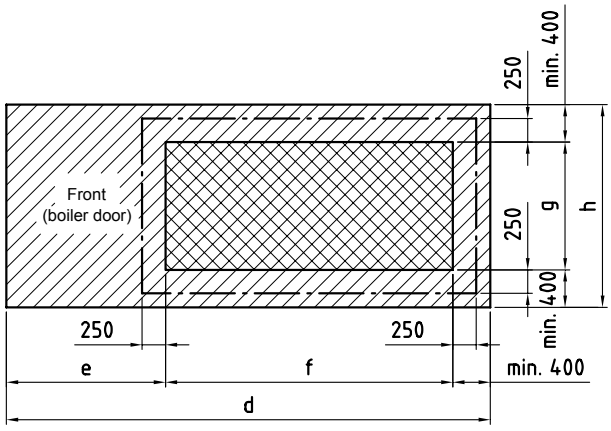
Dimensional drawing:











Boiler bearing surface

Floor with heat-resistant design additional

The floor construction has to be free of any pipes or installation lines!
Danger through the effects of heat!

1) 800 mm access, firing block
960 mm if there is a door stop & pneum. cleaning system
Position of approx. 110° required for manual cleaning of heat exchanger

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Connections/dimensions:

PYRTEC [Item no.]			***KPT-530***	***KPT-720***	***KPT-950***	***KPT-1250***
Water connections PN 6 (see Spec Sheet 7960)						
I	*Boiler forward flow*		*DN 100*	*DN 100*	*DN 125*	*DN 125*
II	*Boiler return flow*		*DN 100*	*DN 100*	*DN 125*	*DN 125*
III	*Connection for extinguishing water*		*R ¾“ AG*	*R ¾“ AG*	*R ¾“ AG*	*R ¾“ AG*
IV	*Drain valve for boiler*		*R 1 ½“IG*	*R 1 ½“ IG*	*R 1 ½“ IG*	*R 1 ½“ IG*
V	*Safety heat exchanger*		*4 x R ½“ AG*	*8 x R ½“ AG*	*8 x R ½“ AG*	*8 x R ½“ AG*
VI	*Dipping shell for thermal run-off safety valve*		*1 x R ½“ IG*	*2 x R ½“ IG*	*2 x R ½“ IG*	*2 x R ½“ IG*
Connection for exhaust gas pipe Ø [mm]		*A*	*350*	*350*	*450*	*450*
Location of the connections [mm]		*a*	*2359*	*2491*	*2444*	*2639*
		b	*1922*	*2562*	*2562*	*3107*
Dimensions of the foundations [mm]		*d*	*4272*	*4912*	*5096*	*5641*
		e	*1400*	*1400*	*1630*	*1630*
		f	*2472*	*3112*	*3066*	*3611*
		g	*1112*	*1112*	*1360*	*1360*
		h	*1912*	*1912*	*2160*	*2160*
Dimensions of the boiler [mm]		*B*	*1380*	*1380*	*1612*	*1612*
		C	*1283*	*1413*	*1371*	*1566*
		D	*760*	*1430*	*1050*	*1550*
		E	*4617*	*5257*	*5447*	*5992*
		F	*1380*	*1380*	*1612*	*1612*
		G	*2353*	*2993*	*2861*	*3406*
		H	*577*	*577*	*657*	*657*
		K	*1200*	*1200*	*1275*	*1275*
		L	*2654*	*2784*	*2981*	*3176*
		M	*2702*	*2834*	*3035*	*3230*
		N	*308*	*308*	*440*	*440*
		O	*803*	*803*	*929*	*929*
		P	*453*	*453*	*479*	*479*
		R	*3237*	*3877*	*3835*	*4380*
		S	*3794*	*4434*	*4392*	*4937*

Parts for maintenance			
1	*Fire box door with solid double hinging*		
2	*Boiler door*		
3	*Cleaning lid for burner trough*		
4	*Cleaning lid for external grate*		
5	*Cleaning lid for heat exchanger*		
6	*Pneumatic cleaning system*	*Item KPT-W…-S*	*Spec Sheet 7120*
Electric drives; ignition			
10	*Feed auger*		
11	*Drive for feed grate*		
12	*Ignition device*		
13	*Primary airflow fan 1*		
14	*Primary airflow fan 2*		
15	*Secondary airflow fan*		
16	*Exhaust gas fan*	*Dimensions:*	*/ Spec Sheet 7110*
17	*De-ashing, fire box auger*	*Item KPT-A.-S*	*/ Spec Sheet 7120*
18	*De-ashing, ascending conveyor auger*	*Item KPT-A.-S*	*/ Spec Sheet 7120*
Switches and sensors	*These items are part of the Pyrocontrol control system*	*Item PYR-…*	*/ Spec Sheet 7800*
20	*Light barrier for feed auger*		
21	*Limit switch for maintenance cover*		
22	*Temperature sensor for feed auger*		
23	*Light barrier for embers*		
24	*Fire box temperature sensor (insertion side)*		
25	*Negative pressure sensor (opposite insertion side)*		
26	*Overpressure monitor for fire box*		
27	*Light barrier for de-ashing*		
28	*Limit switch for fire box door*		
29	*Boiler sensor*		
30	*Return flow sensor*		
31	*Temperature-limiting safety switch (TLSS)*		
32	*Exhaust gas sensor*	*Location:*	*Spec Sheet 7110*
33	*Lambda sensor with measuring transducer*	*Location:*	*Spec Sheet 7110*