Maskinfabrikken REKA A/S . Vestvej 7 . DK-9600 Aars . Tlf. (+45)98624011 . Telefax (+45)98624071
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REKA PUSH GRATE BOILER TYPE HKRSV

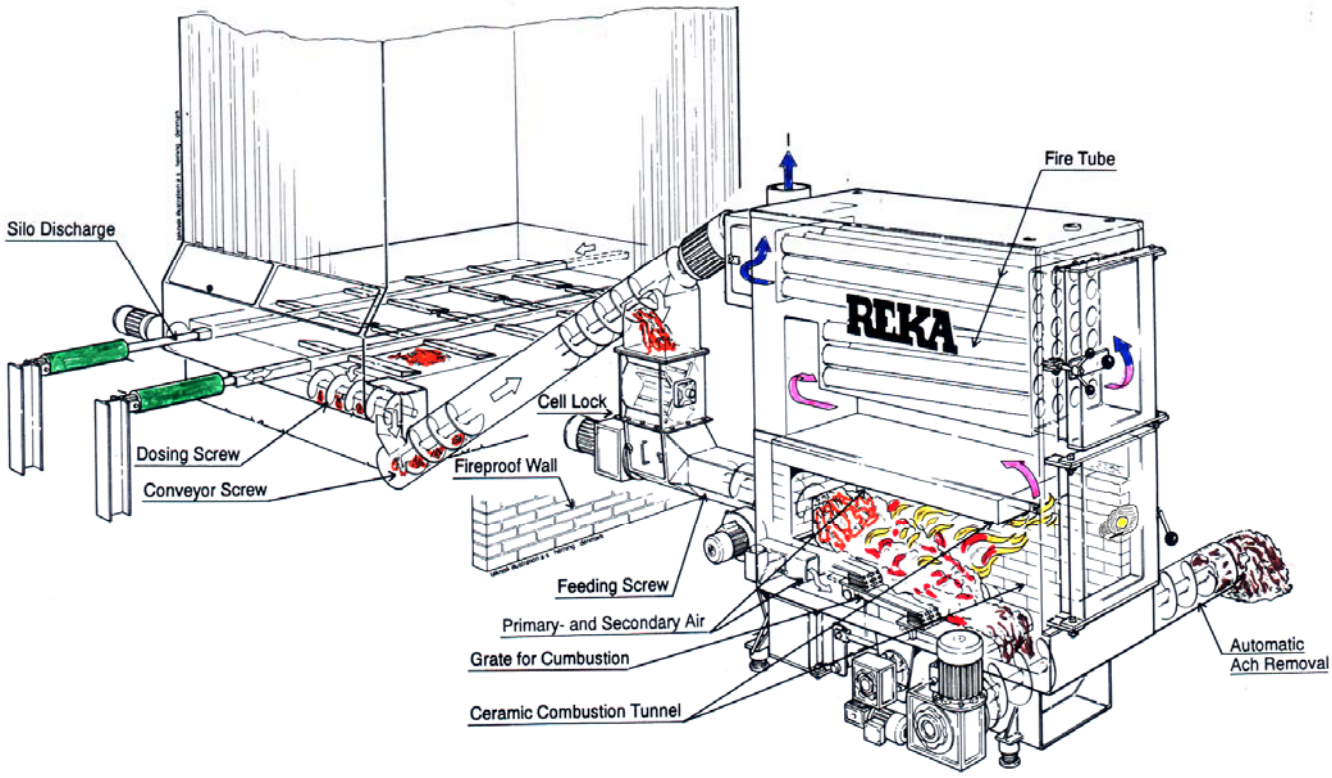
100 kW to 3,5 MW

Fully automatic boiler plants for fuel with 30-50% humidity:

Wood chip

Complete boiler plant

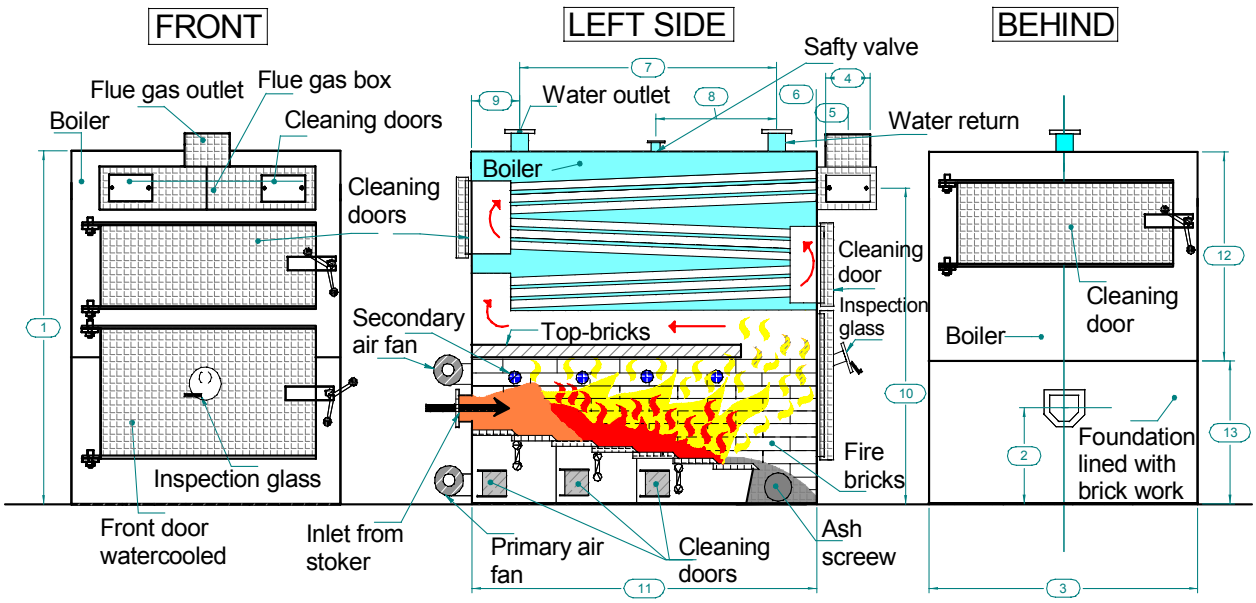
Complete boiler plant with hydraulic discharge system for combustion of wood chip.



Push grate section:

The push grate section is placed straight below the boiler. The grate elements are made from heat resisting cast iron. The traveling- and stopping time can be adjusted in the control table.
There is very little falling-through-ashes because of the special design of the grate elements.
All grate elements can be exchanges without special tools.
If there is used special slag-creating fuels as straw etc., the grate can be equipped with water cooling.
The ashes which has dropped through the grate is normally taken out through the cleaning door manually.
If there is a special wish from the customer the drop-through ashes can be removed automatically (more price).
The ashes from the grate is normally almost 100% burnet out (light grey colour). It is brought out from the grate end by a heat resistant ash screw.
At the front end the grate has a big admission water cooled door. This door has an inspection glass, which can be turned, so that it is protected during service.
The room below the grate is divided in zones. Every zone is supplied by primary air through a channel. Each channel has an adjustable damper.
Inside the grate section is insulated with mineral wool. Then moler bricks, and then (in most) heat resistant chamotte bricks
The secondary air nozzles are placed in the boiler sides. Each nozzle has individual adjusting damper.
The direction of the dampers can easily be changed from outside, without cooling down the boiler.
The nozzles are made of special heat-resisting material.

Boiler dimensions



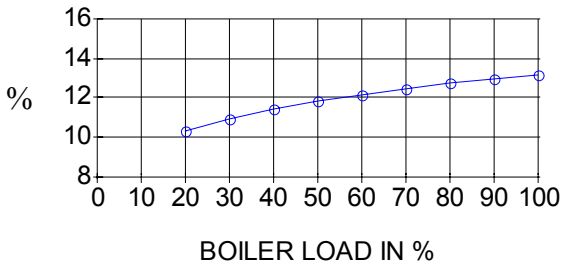
Boiler sizes	kW	100	160	200	300	350	400	500	600	650	750	1000	1300	1500	2000	2600	3000	3500
1. (Total height incl. Insul.)	mm	2245	2400	2365	2640	2646	2765	2705	2700	2700	3085	3270	3680	3880	4035	4055	5240	5240
2. (Floor to stoker)	mm	785	910	910	880	930	890	890	930	1100	1100	1100	1100	1100	1300	1315	1640	1640
3. (Total. width)	mm	990	930	1236	1316	1316	1370	1534	1534	1546	1534	1534	1722	1722	2340	2340	2700	2700
4. (Flue gas duct diam.)	mm	215	215	215	250	250	250	250	300	300	300	300	350	350	590*590	590*590	500	550
5. (Flue gas box to boiler)	mm	250	270	250	240	240	240	240	240	240	350	300	320	320	600	600	400	400
6. (Back end to flange)	mm	320	320	400	330	400	370	538	390	390	515	730	730	730	1680	1680	1930	1930
7. (Between outl.- retu. fl.)	mm	950	1400	1500	1370	1300	1440	1344	1600	1600	1970	1805	2000	2000	2250	2250	2300	2300
8. (Between safty - retu. fl.)	mm	360	600	750	680	650	690	672	800	800	1045	970	1000	1000	1130	1130	1380	1380
9. (Front end to outl. flange)	mm	240	550	400	570	570	460	734	630	630	795	730	720	720	600	600	600	600
10.(Floor to flue gas box)	mm	2000	2050	2195	2340	2350	2590	2560	2550	2550	2855	2980	3390	2650	2550	2570	4420	4420
11.(Total length)	mm	1770	2515	2300	2520	2520	2520	2780	2780	2900	3528	3530	3700	3700	4530	4530	4830	4830
12. (Boiler height)	mm	1270	1300	1270	1545	1546	1670	1610	1610	1610	1850	1850	2260	2460	2455	2455	3300	3300
13. (Foundation height)	mm	975	1100	1095	1095	1100	1095	1095	1090	1090	1235	1420	1420	1420	1580	1600	1940	1940
Stoker screw diameter	mm	150	150	180	180	180	180	180	200	200	250	250	250	250	300	300	400	400
Ash screw diameter	mm	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Outlet flange (PN 16)	mm	50	50	65	65	80	80	100	100	100	100	125	150	150	200	200	200	200
Return flange (PN 16)	mm	50	50	65	65	80	80	100	100	100	100	125	150	150	200	200	200	200
Safety valve flange (PN 16)	mm	32	32	40	40	40	40	40	40	40	40	50	50	50	125	150	150	150
Boiler weight without water	kg	1500	1800	1900	2100	2300	2400	3300	3600	3800	4000	5800	7000	7700	10200	11000	14000	15500
Foundation section weight	kg	1300	1500	1500	1800	2000	2900	3000	3500	3500	4000	4200	5500	5900	8000	8000	12000	13000
Water content	litre	1000	1150	1250	1400	1600	1800	2300	2600	2900	3100	5200	5000	5600	10500	10000	16700	16500
Hydraulic test pressure	bar	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Design pressure max	bar	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5
Turning radius frontal door	mm	550	700	700	800	800	800	1000	1150	1150	1100	1100	1150	1150	1150	1150	1200	1200

The boiler:

REKA push grate boiler type HKRSV can be fed with fuel witch has a humidity of max 50 % of total weight.
The boiler is made of 1.class steel materials, and the weldings are done by certified welders.
It has 4 passes, 3 of which are convection passes. The boiler tubes have big wall-thickness (4,5mm), which does that the life time of the boiler is very long, normally 20 years.
The boiler tubes have big diameter, causing easy cleaning.
Above the grate are placed concreted and furnace hardened fire bricks, with casted in stainless steel needles. Those bricks make sure that the moisture fuel dry-up and burn with a good result.
All inspection doors are made quite big, and are equipped with adjustable hinges and closing mechanism.
The boiler has an external insulation by 100 mm mineral wool which is covered by 1 mm thick Al-Zn-covered steel plates.

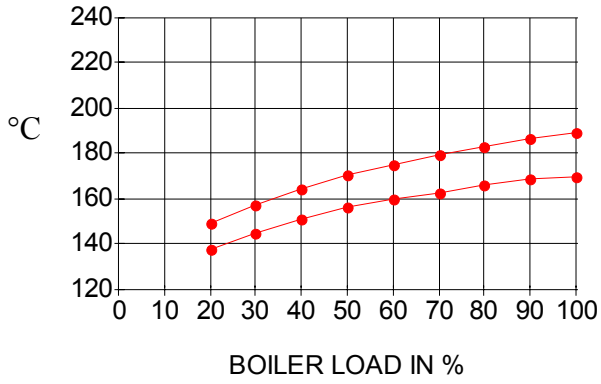
Graphs

CO2 CONTENT IN FLUE GAS IN %



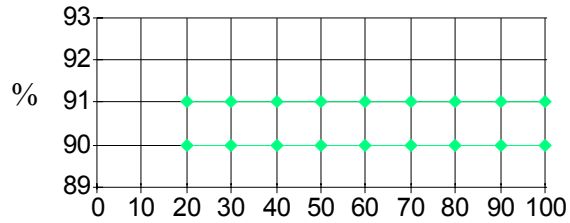
FLUE GAS TEMPERATURE

Water outlet temp. is 90 degrees C.



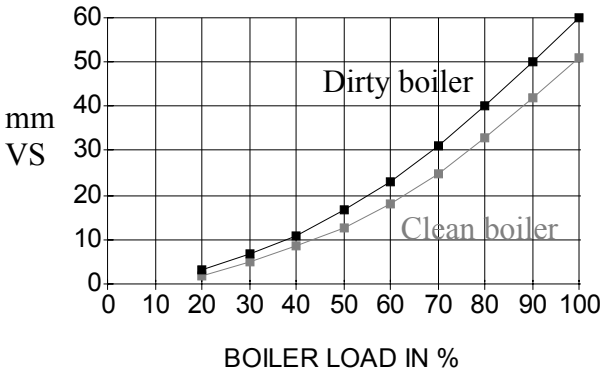
TERMAL EFFICIENCY IN %

Water outlet temp. is 90 degrees C.



PRESSURE LOSS ON FLUE GAS SIDE

Water outlet temp. is 90 degrees C.



Start-up advice

By start-up of cold boiler there will normally create a little condensation water in the flue gas outlet box. This will disappear when the boiler water temperature has reached 60 ºC.
By start-up of new boiler, the boiler should run by low load (approach 25% load) in approach 24 hours. Then the load can be increased. This should be done in order to get a good drying-out of the brickwork in the inspection doors and in the furnace.

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