



Kotlovi i logistika biomase - praktično znanje

Boilers and biomass logistic – practical knowledge

Povijest od HERZ

Kvaliteta i
inovativnost
već 120 godina



Povijest HERZ – grupacije vodi nas u 1896. godinu, u ulicu Herzgasse u Beču, kada su osnivačke obitelji Gebauer i Lehrner započeli s proizvodnjom armatura.

Ta prva adresa – Herzgasse – tako je dala i ime današnjoj HERZ - grupaciji



**ARMATUREN,
APPARATE u.
METALLWAREN
FABRIKEN**

TELEPHONS MIT INTERURS ANSCHLUSS:
COMPTOIR u. MAGAZIN
ALLE ARBEITSLUNDEN:
R-10-3-40 SERIE
MAGAZIN u. EXPEDIT ALLEINIC
R-10-0-53
TELEGRAMME:
VENTILFABRIKEN WIEN

ÖST. POSTSPARKASSA NR. 4
UNG. POSTSPARKASSA NR. 1
PÖLN. POSTSPARKASSA
IN WARSCHAU NR. 191.946

BANK:
NIEDERÖSTERREICH. GEWERBE
U. HANDELSBANK, WIEN.

GEBAUER & LEHRNER
WIEN

Jnzersdorferstrasse 50-56. Neilreichgasse 53-55.
X., HERZGASSE 64-66.
Schröttergasse 47-53.

Wien, am 29. Dezember 1
X., Herzgasse 64-66.

Ge gesch Schutzeurke
In allen Kulturstädten angemeldet



The history of HERZ

Quality
and
innovations
since 120
years



The history of HERZ starts in the year **1896**, in the „HERZgasse“ in „Wien-Favoriten“ where the **families Gebauer and Lehrner** started with the production of valves.

The company HERZ is named after the first address – “**HERZgasse**”.

The “**HERZgasse**” was named after Dr. Rudolf HERZ, a benefactor to the poor inhabitants of Vienna.

**ARMATUREN,
APPARATE u.**

TELEPHONS MIT INTERURS ANSCHLUSS:
COMPTOIR u. MAGAZIN
ALLE ARBEITSLÄUFEN.
R-10-5-10 SERIE
MAGAZIN u. EXPEDIT ALLEINIC
R-10-0-53
TELEGRAMME:
VENTILFABRIKEN WIEN

**METALLWAREN
FABRIKEN**

ÖST. POSTSPARKASSA NR. 4
UNG. POSTSPARKASSA NR. 1
POLN. POSTSPARKASSA
IN WARSCHAU NR. 191.948
BANK:
NIEDERÖSTERRE. GEWERBE
U. HANDELSBANK, WIEN.

GEBAUER & LEHRNER

WIEN

Inzersdorferstrasse 50-56. Neilreichgasse 53-55.
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Schrötergasse 47-53.

Wien, am 29. Dezember 1
X., Herzgasse 64-66.

Ge gesch Schutzeinrich
In allen Kulturstädten angemeldet





Vlasnik: Dr. Gerhard Glinzerer

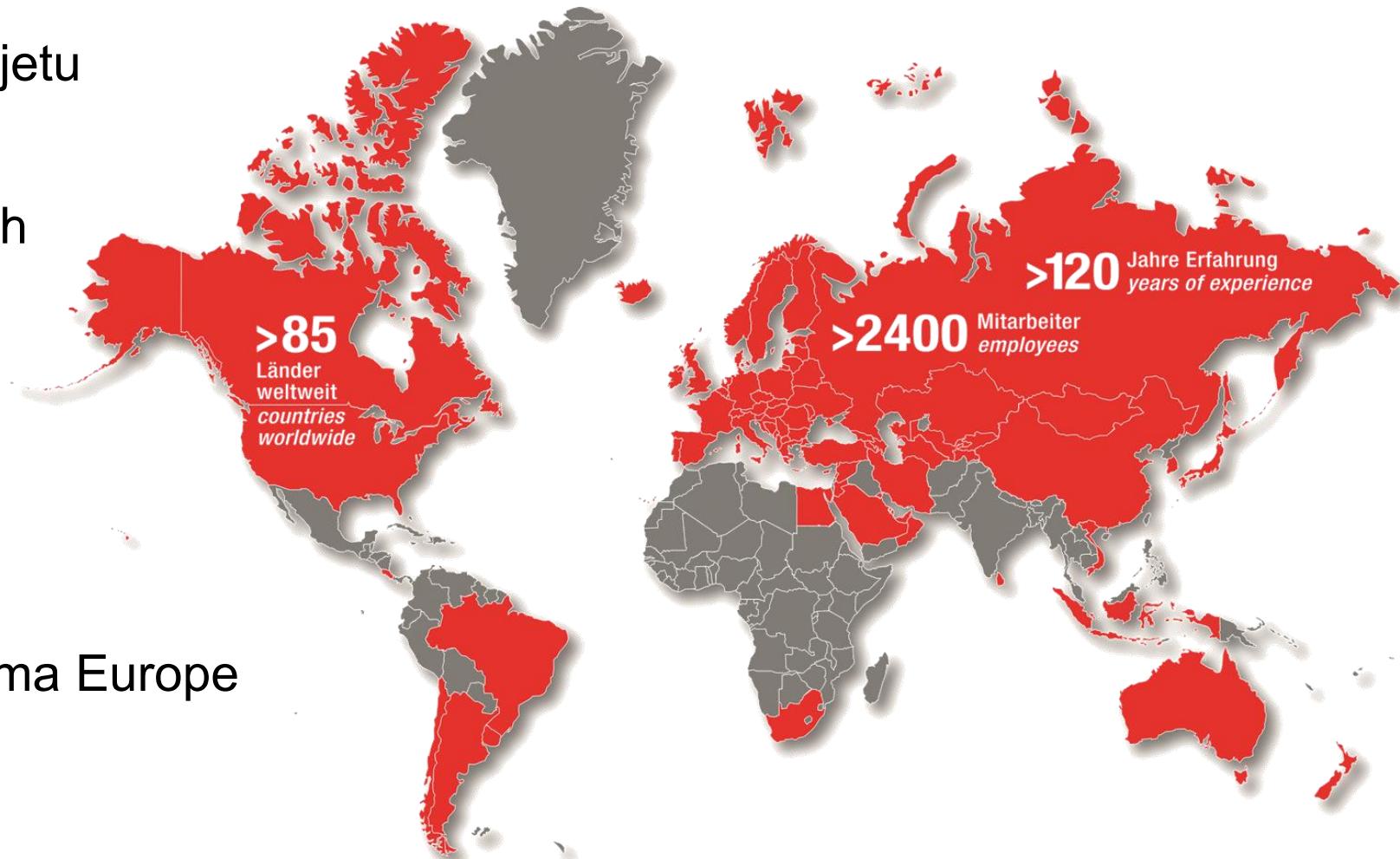
- Neovisna tvrtka
- Kontinuirani rast
- Međunarodna najviši položaj
- potpuni dobavljač u sektoru grijanja
- razvoj i unapređenje proizvoda
- ekološko i ekonomsko promišljanje



Owner: Dr. Gerhard Glinzerer

- independent company
- continuous growth
- international top position
- complete supplier in the heating sector
- development and improvement of products
- ecological and economic thinking

- **120**-godina na tržištu
- preko **85** država u svijetu
- preko **2500** zaposlenih
- **260** Mio. € promet
- **22** tvornice u Europi
 - 8 u Austrij
 - 14 u drugim državama Europe
- **75%** izvoza
- **22** tvrtke kćeri



The HERZ-group

- **120**-years present on the market

- in over **85** countries worldwide

- over **2500** employees

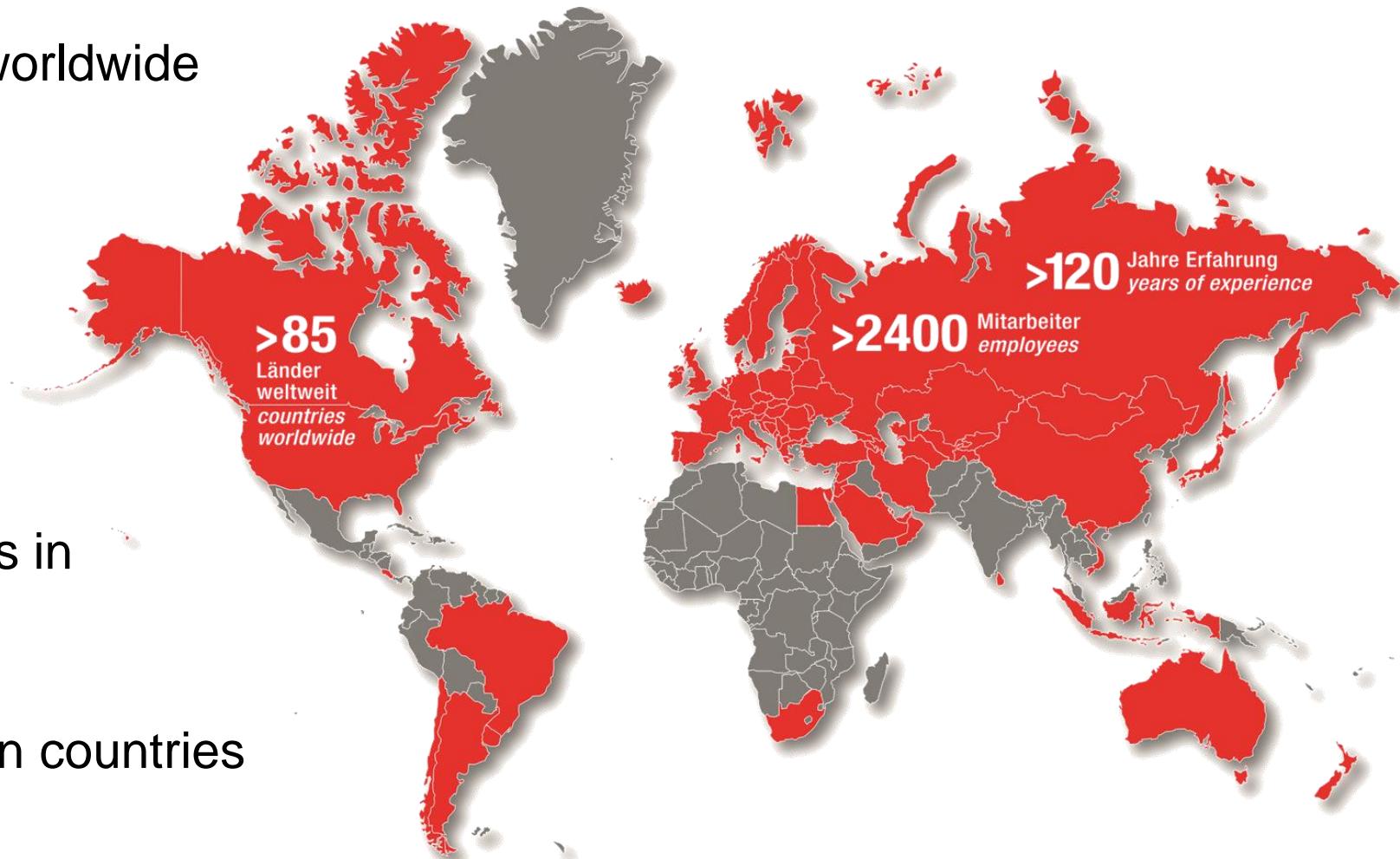
- **260** Mio. € turnover

- **22** production facilities in whole Europe

- 8 in Austria
 - 14 in other european countries

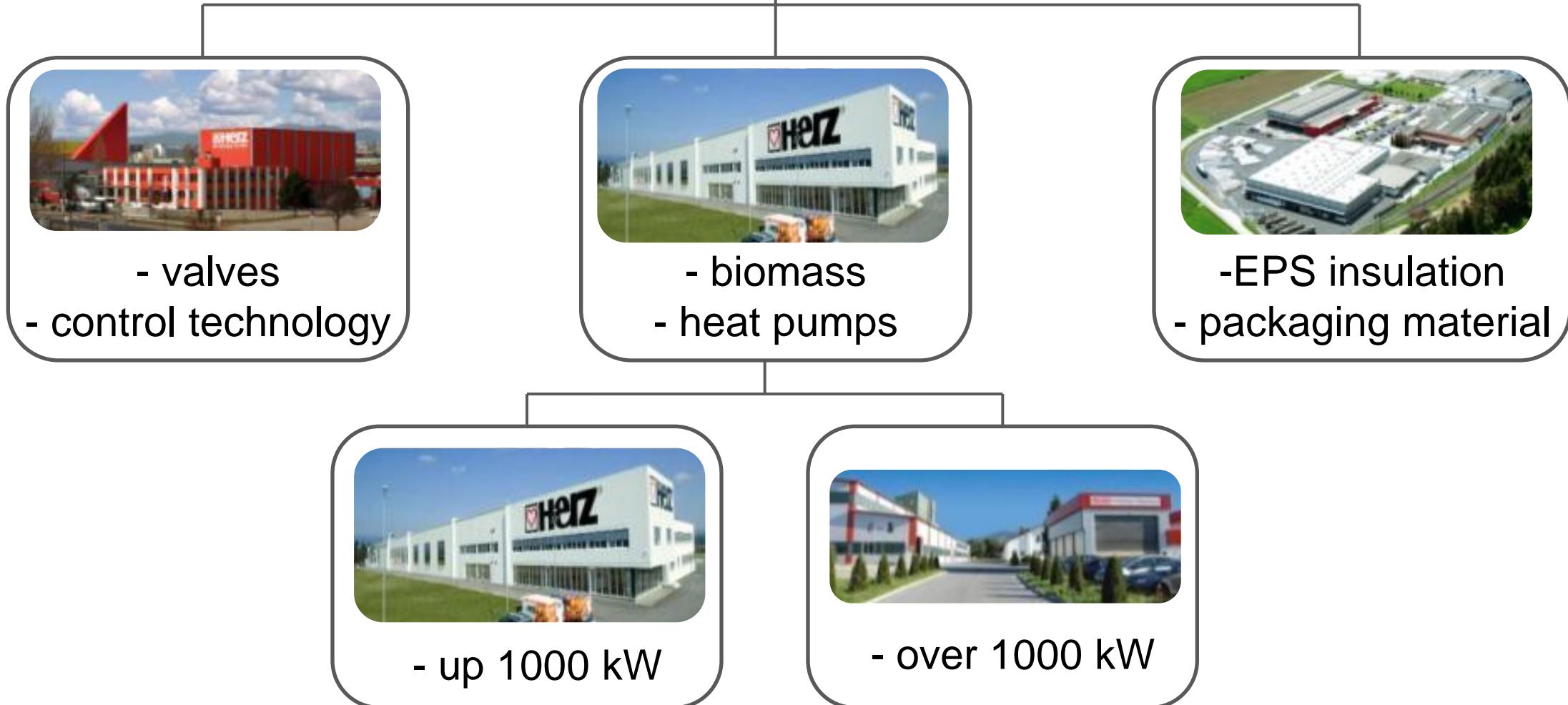
- **75%** export ratio

- **22** subsidiaries





The group structure



Proizvodni pogoni

8 proizvodnih pogona u Austriji



▪ Pinkafeld



▪ Kemeten



▪ Sebersdorf



▪ Bärnbach (Binder)



▪ Rohrbach (IPA)



▪ Glanegg (Hirsch)



▪ Salzburg (Universa)



▪ Beč

14 proizvodnih pogona u drugim državama

▪ Poljska (3)



▪ Srbija



▪ Mađarska (3)



▪ Češka



▪ Rumunска (2)



▪ Slovenija



▪ Slovačka (2)



▪ Italija



The production facilities



8 production facilities in Austria



■ Vienna



■ Rohrbach (IPA)



■ Glanegg (Hirsch)



■ Pinkafeld



■ Kemeten



■ Sebersdorf



■ Bärnbach (Binder)



■ Salzburg (Universa)

14 production facilities in other european countries

■ Poland (3)



■ Serbia



■ Hungary (3)



■ Czechia



■ Romania (2)



■ Slovenia

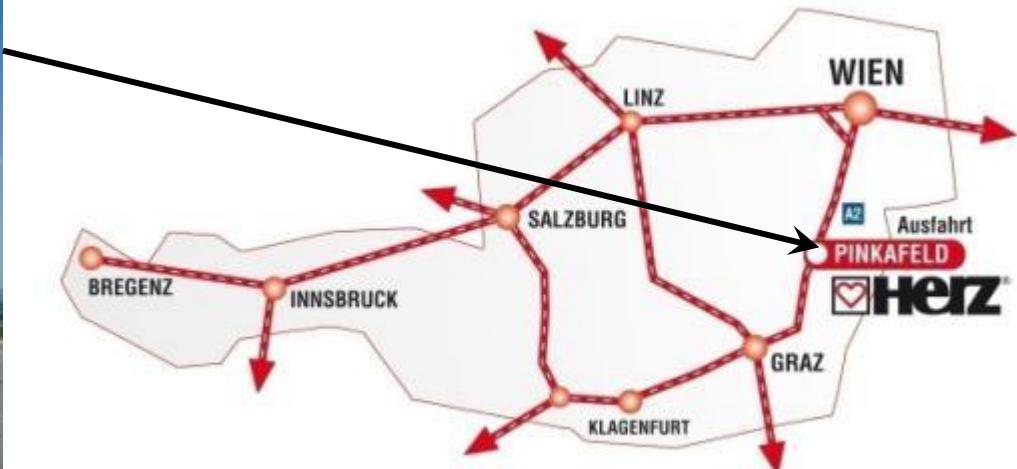


■ Slovakia (2)



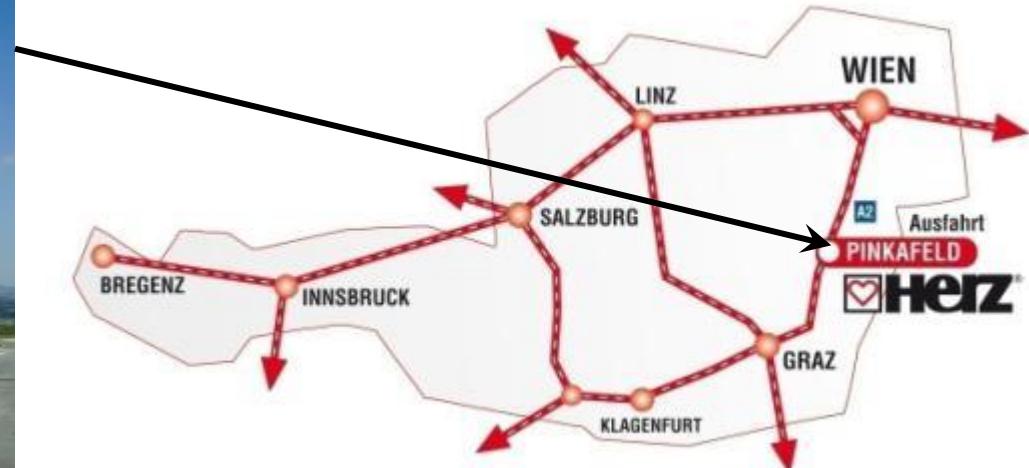
■ Italy





- Investicija: € 20.000.000,-
 - Od toga 50% strojevi
- Nova radnja mjesta ~250
- Zemljište: ~ 40.000m² / Izgrađenost u prvoj fazi: 12.000m²
- Uredi, proizvodnja, ispitivanje, tehnički laboratorij, institut

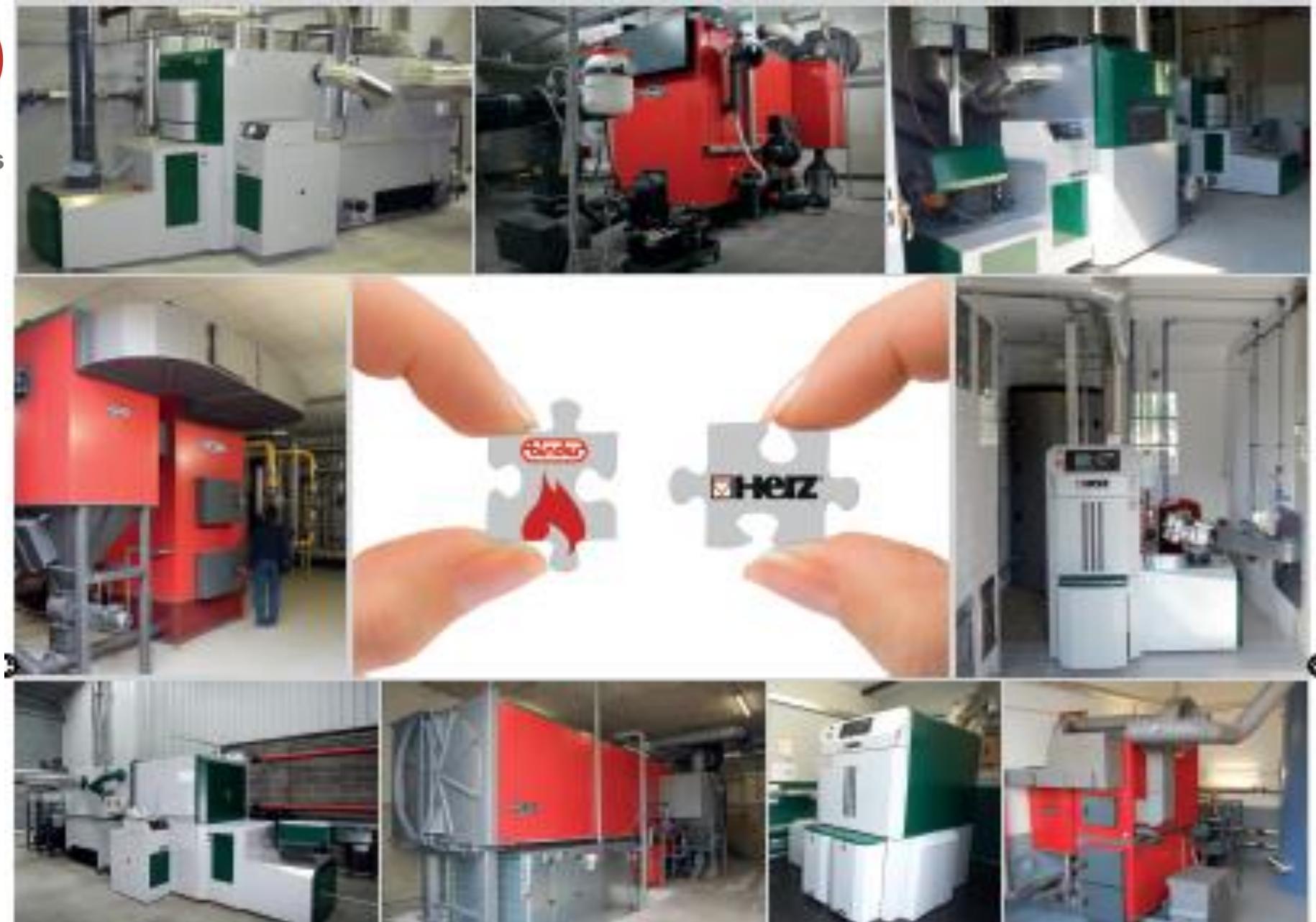




- Investment costs: € 20.000.000,-
 - 50% for machines
- Employees ~250
- Land area: ~ 40.000m² / Building area stage I: 12.000m²
- Office / R&D-centre (research and development) / production



Novi član u Herz gruvi (do 20 MW)
New member in HERZ group (up to 20MW)



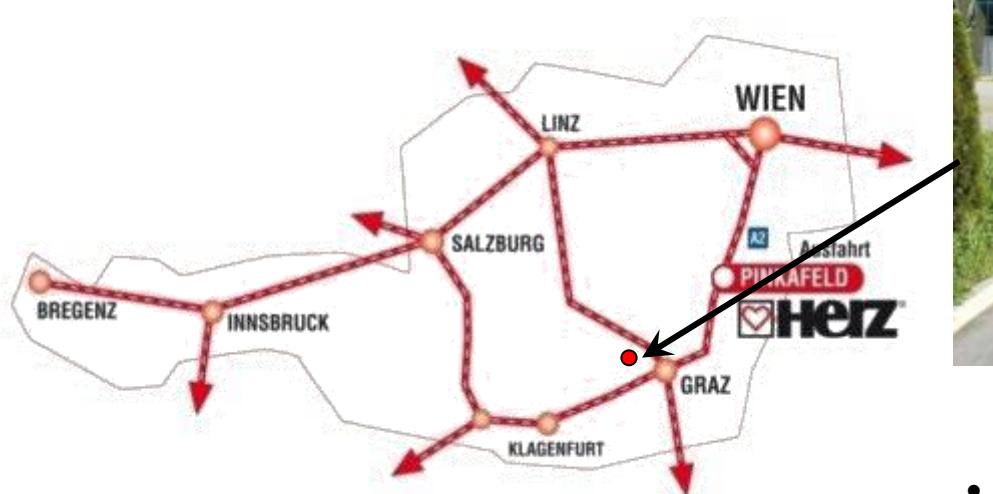
Novi član u Herz grupi (do 20 MW)
New member in HERZ group (up to 20MW)





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Energy from Biomass

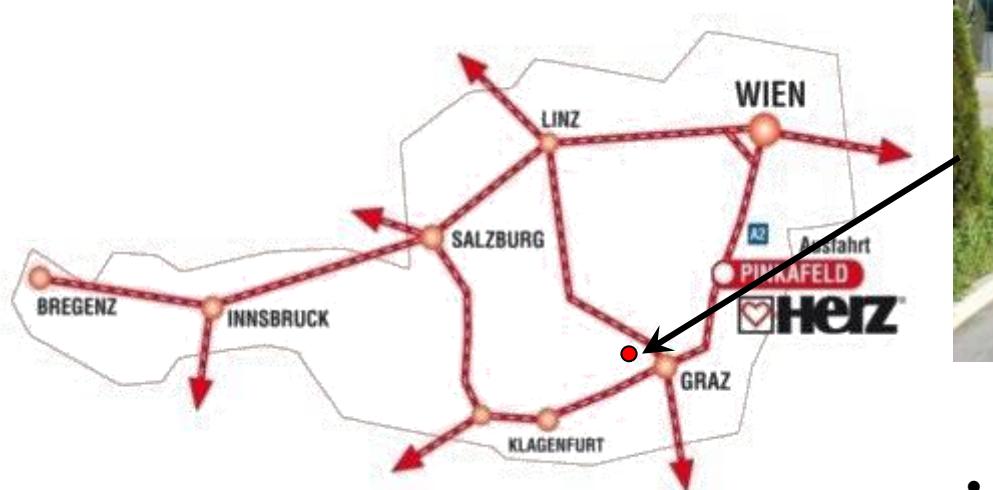


- Kotlove do 20MW
- Bärnbach
- ~ 80 zaposlenika



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Energy from Biomass



- Boilers up to 20 MW
- Bärnbach
- approx. 80 employees

Proizvodi - Biomasa

Kotlovi na cjepanice

firestar

BioControl	T-Control	Lambda	ECO
18 kW	20 kW	18 kW	20 kW
30 kW	30 kW	20 kW	30 kW
40 kW	40 kW	30 kW	40 kW

Peleti

pelletstar

T-Control	ECO	CONDENS
10 kW	10 kW	10 kW
20 kW	20 kW	12 kW
30 kW	30 kW	14 kW
45 kW	45 kW	16 kW
60 kW	60 kW	

Kombi pelletfire

20 kW
30 kW
40 kW
60 kW
80 kW
101 kW
130 kW
151 kW
180 kW
201 kW
251 kW
301 kW
351 kW
401 kW
499 kW

firematic

20 kW
35 kW
45 kW
60 kW
80 kW
101 kW
130 kW
151 kW
180 kW
201 kW
251 kW
301 kW
351 kW
401 kW
499 kW

Tipping grate

BioMatic

300 kW
350 kW
400 kW
450 kW
500 kW
600 kW
800 kW
1000 kW
1250 kW
1500 kW

BioFire

500 kW
600 kW
800 kW
1000 kW
1250 kW
1500 kW

Tehnika spremnika

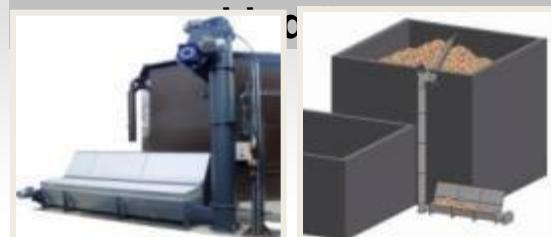
Spremniči PTV-a
Spremniči topline
Higijenski moduli



Kontejnerska postrojenja



Sustavi za punjenje



The product range - biomass

Log wood

firestar			
BioControl	T-Control	Lambda	ECO
18 kW	20 kW 30 kW 40 kW	18 kW 20 kW 30 kW 40 kW	20 kW 30 kW 40 kW
			

Pellets

pelletstar		
T-Control	ECO	CONDENS
10 kW	10 kW	10 kW
20 kW	20 kW	12 kW
30 kW	30 kW	14 kW
45 kW	45 kW	16 kW
60 kW	60 kW	



**Combi
pelletfire**

Wood chip / Pellets

firematic	BioMatic	BioFire
20 kW	300 kW	500 kW
35 kW	350 kW	600 kW
45 kW	400 kW	800 kW
60 kW	450 kW	1000 kW
80 kW		1250 kW
101 kW		1500 kW
130 kW		
151 kW		
180 kW		
201 kW		
251 kW		
301 kW		
351 kW		
401 kW		
499 kW		
Tipping grate		
Step grate		

- Buffer tanks
- Hot water tanks
- Fresh water modules



Heating containers

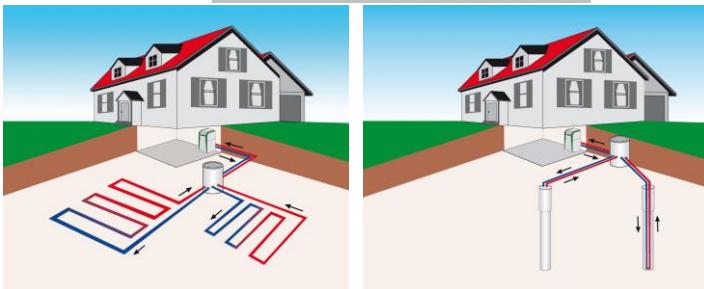


Filling systems

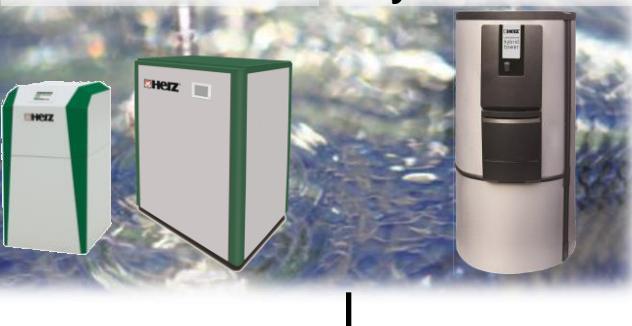


Proizvodi – dizalice topline

rasolina / voda



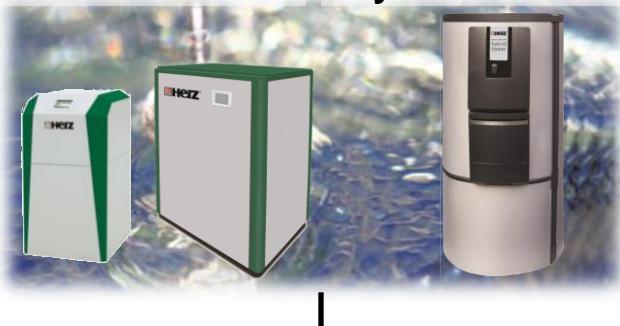
commotherm SW



voda / voda



commotherm WW



zrak / voda



commotherm LW-A



pitka voda

commotherm BWP
300 and 500l



Fresh water module
BioFresh eco
WP-Fresh hydro



Type	3~ (3x400 VAC)	1~ (1x230VAC)
5	5,7 kW	4,8 kW
7	7,3 kW	7,4 kW
10	10,6 kW	8,8 kW
12	11,7 kW	11,5 kW
15	14,4 kW	-
23	22,5 kW	-
30	30,1 kW	-
40	39,1 kW	-
60	60,2 kW	-
80	78,2 kW	-

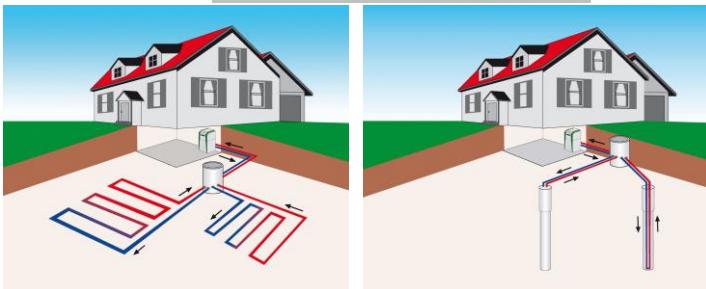
Type	3~ (3x400 VAC)	1~ (1x230VAC)
5	7,4 kW	5,8 kW
7	9,5 kW	8,8 kW
10	13,8 kW	11,7kW
12	15,1 kW	14,4 kW
15	18,5 kW	-
30	30,5 kW	-
40	40,8 kW	-
60	61,0 kW	-
80	81,6 kW	-

Type	3~ (3x400 VAC)
6	6,4 kW
8	7,9 kW
10	9,94 kW
13	12,46 kW
17	15,75 kW
23	21,2 kW
30	28,3 kW
40	36,8 kW
60	56,6 kW
80	73,6 kW

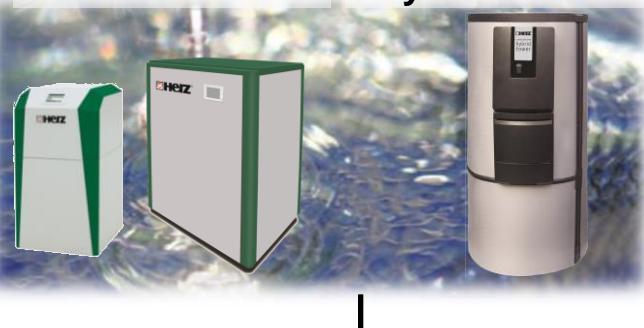
The product range - heat pump



brine / water



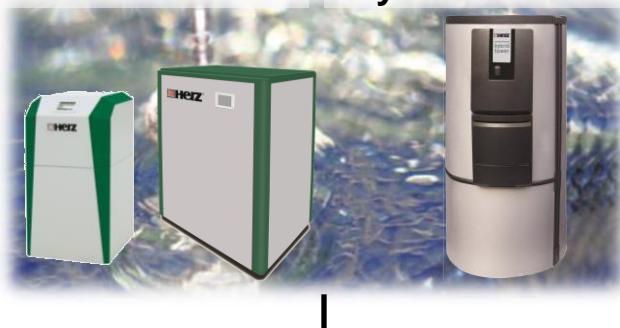
commotherm SW



water / water



commotherm WW



air / water



commotherm LW-A



Hot water

**commotherm BWP
300 and 500l**



Fresh water module
BioFresh eco
WP-Fresh hydro



Type	3~ (3x400 VAC)	1~ (1x230VAC)
5	5,7 kW	4,8 kW
7	7,3 kW	7,4 kW
10	10,6 kW	8,8 kW
12	11,7 kW	11,5 kW
15	14,4 kW	-
23	22,5 kW	-
30	30,1 kW	-
40	39,1 kW	-
60	60,2 kW	-
80	78,2 kW	-

Type	3~ (3x400 VAC)	1~ (1x230VAC)
5	7,4 kW	5,8 kW
7	9,5 kW	8,8 kW
10	13,8 kW	11,7kW
12	15,1 kW	14,4 kW
15	18,5 kW	-
30	30,5 kW	-
40	40,8 kW	-
60	61,0 kW	-
80	81,6 kW	-

Type	3~ (3x400 VAC)
6	6,4 kW
8	7,9 kW
10	9,94 kW
13	12,46 kW
17	15,75 kW
23	21,2 kW
30	28,3 kW
40	36,8 kW
60	56,6 kW
80	73,6 kW



Toplovodni kotlovi ($\leq 110^{\circ}\text{C}$)



Vrelovodni kotlovi ($> 110^{\circ}\text{C}$)



Kotlovi na zasićenu paru



Zračni izmjenjivači topline



Ložišta



ORC-procesi & CHP-postrojenja

Postrojenja s termičkim uljem



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Energy from Biomass

BINDER - product range



Warm water boiler ($\leq 110 \text{ }^{\circ}\text{C}$)



Hot water boiler ($> 110 \text{ }^{\circ}\text{C}$)



Saturated steam boiler



Air-to-air heat exchanger



Combustion chambers



ORC process & CHP systems

Thermal oil systems



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Energy from Biomass

Opis	Nazivni učinak u kW (uz vlažnost W40)	Kontejner	Izmjenjivač topline	RRF	SRF-S	SRF-H	TSRF	WW	HW	Para
RRK 10M	10.000		III		●	●	▲	▲	▲	▲
RRK 9M	9.000		III		●	●	▲	▲	▲	▲
RRK 8M	8.000		III		●	●	▲	▲	▲	▲
RRK 7M	7.000		III		●	●	▲	▲	▲	▲
RRK 6M	6.000		III		●	●	▲	▲	▲	▲
RRK 5M	5.000		III		●	●	▲	▲	▲	▲
RRK 4M	4.000		III		●	●	▲	▲	▲	▲
RRK 2500-3000	3.000		III	●	●	●	●	▲	▲	▲
RRK 1800-2300	2.100		III	●	●	●	●	▲	▲	▲
RRK 1200-1650	1.650	C	III	●	●	●	●	▲	▲	▲
RRK 1000	1.200	C	III	●	●	●	●	▲	▲	▲
RRK 640-850	850	C	III	●	●	●	●	▲	▲	▲
RRK 400-600	650		III	●	●	●	●	▲	▲	▲
RRK 200-350	500		III	●	●	●	●	▲	▲	▲
RRK 200-350	350		III	●	●	●	●	▲	▲	▲
RRK 130-250	300		III	●	●	●	●	▲	▲	▲
RRK 130-250	250		III	●	●	●	●	▲	▲	▲
RRK 80-175	200		III	●	●	●	●	▲	▲	▲
RRK 80-175	185		III	●	●	●	●	▲	▲	▲
RRK 80-175	149		III	●				▲		
RRK 80-175	100		III					▲		

C auch als Containerversion verfügbar.

C* in Normcontainer

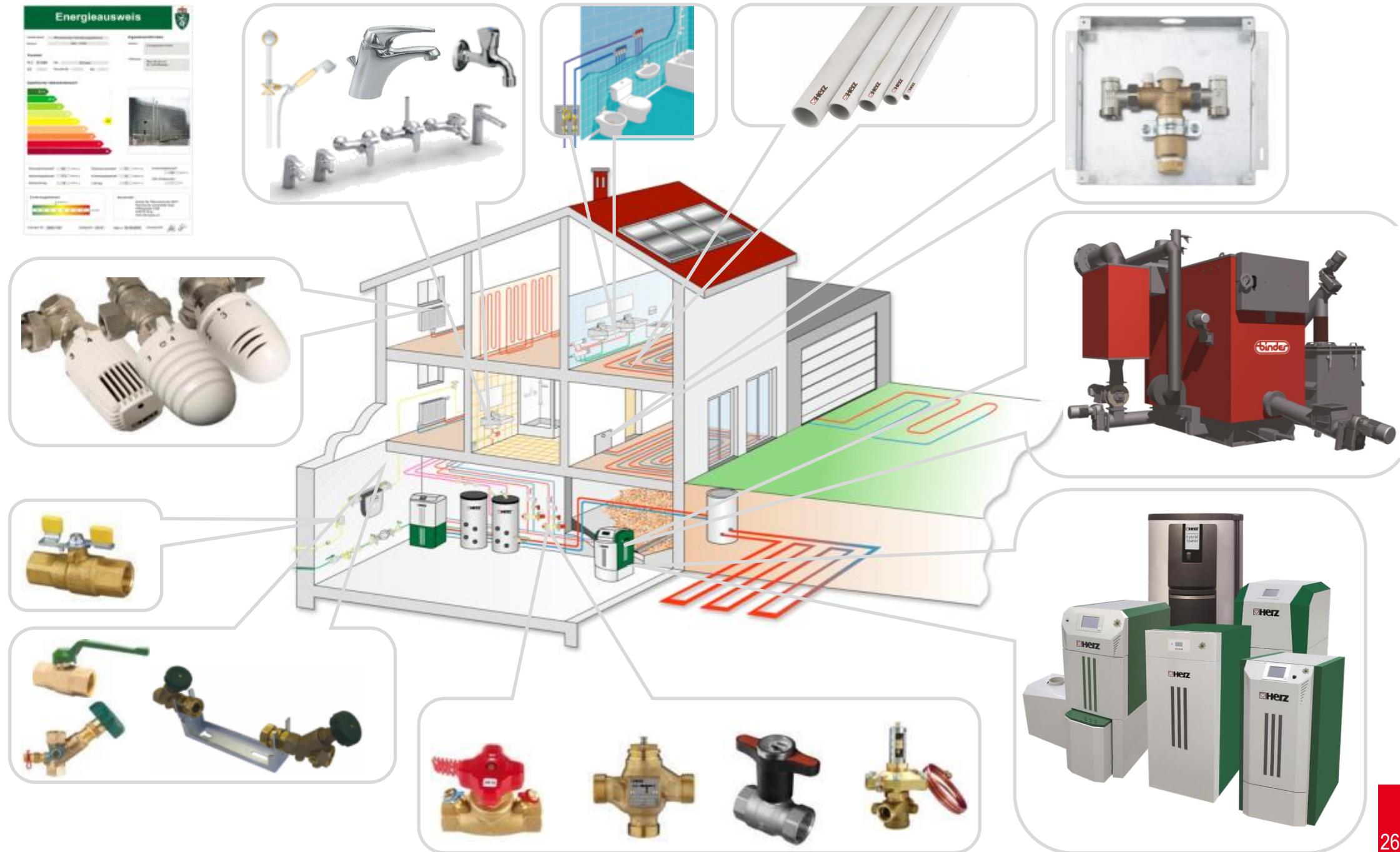
BINDER – product range



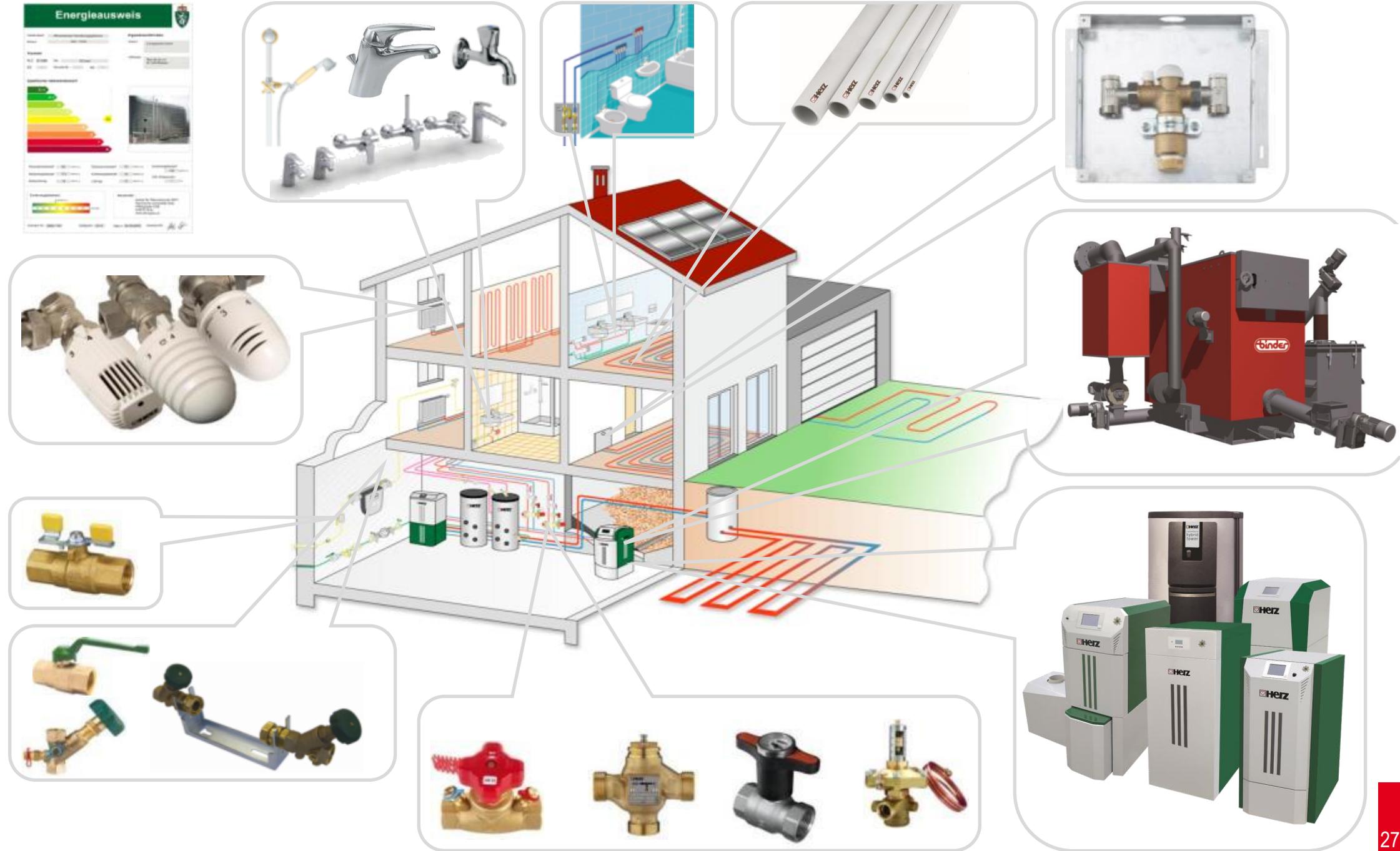
Type	Nominal capacity in kW (referred to W40)	Container	Heat exchanger	RRF	SRF-S	SRF-H	TSRF	WW	HW	Steam
RRK 10M	10.000		III		●	●	▲	▲	▲	▲
RRK 9M	9.000		III		●	●	▲	▲	▲	▲
RRK 8M	8.000		III		●	●	▲	▲	▲	▲
RRK 7M	7.000		III		●	●	▲	▲	▲	▲
RRK 6M	6.000		III		●	●	▲	▲	▲	▲
RRK 5M	5.000		III		●	●	▲	▲	▲	▲
RRK 4M	4.000		III		●	●	▲	▲	▲	▲
RRK 2500-3000	3.000		III	●	●	●	▲	▲	▲	▲
RRK 1800-2300	2.100		III	●	●	●	●	▲	▲	▲
RRK 1200-1650	1.650	C	III	●	●	●	●	▲	▲	▲
RRK 1000	1.200	C	III	●	●	●	●	▲	▲	▲
RRK 640-850	850	C	III	●	●	●	●	▲	▲	▲
RRK 400-600	650		III	●	●	●	●	▲	▲	▲
RRK 400-600	500		III	●	●	●	●	▲	▲	▲
RRK 200-350	350		III	●	●	●	●	▲	▲	▲
RRK 200-350	300	C*	III	●	●	●	●	▲	▲	▲
RRK 130-250	250	C*	III	●	●	●	●	▲	▲	▲
RRK 130-250	200	C*	III	●	●	●	●	▲	▲	▲
RRK 80-175	185		III	●	●	●	●	▲	▲	▲
RRK 80-175	149	C*	III	●				▲		
RRK 80-175	100	C*	III	●				▲		

C available as container version
C* in standard container

HERZ, Kompletan proizvođač



HERZ, the full-service provider



Što treba uzeti u obzir kada se projektira? *What should be considered when planning?*

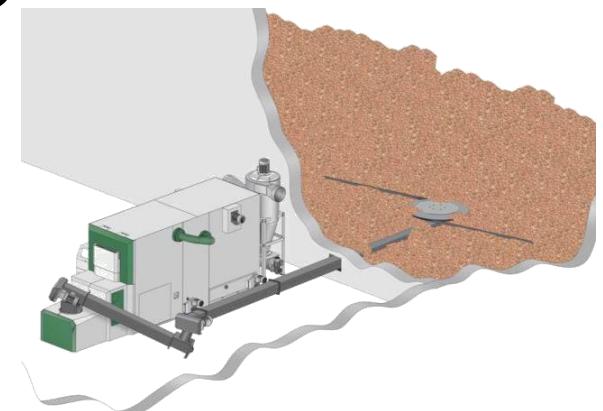
4 važna kriterija:

Zahtjev za toplinom - koliko kW trebamo?

Gorivo - koji materijal je dostupan?

Prostor i mjesto - šta imam na raspolaganju?

Emisije - Koje ograničenja trebam držati?



4 important criteria:

Demand for heating – how much kW I need?

Fuel - which material is available?

Space and place - what do I have?

Emissions - what limits should I keep?

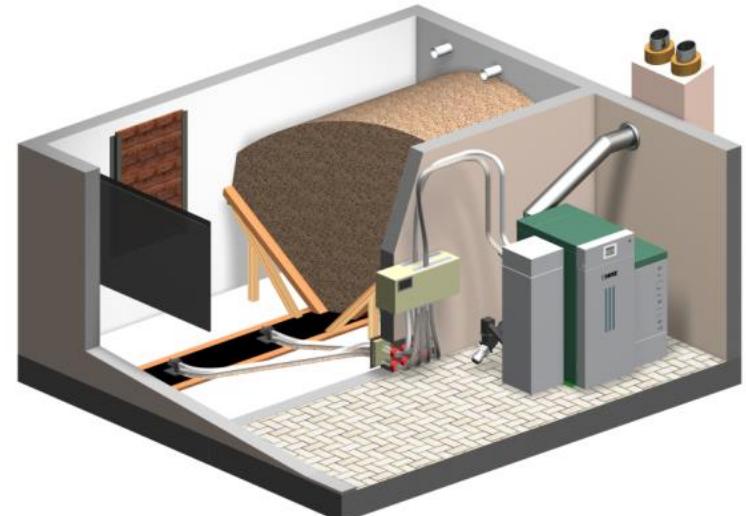


Zavisi od:

Kotla - veličina od kotla i kolika kg/h treba transportirat

Gorivo - koji materijal upotrebljavamo?

Mjesto - šta imam na raspolaganju? velike udaljenosti?

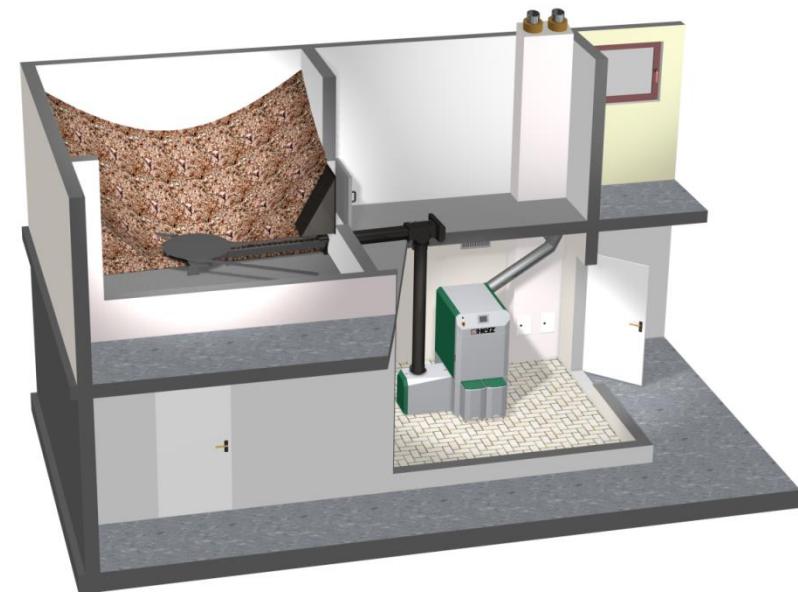


It depends on:

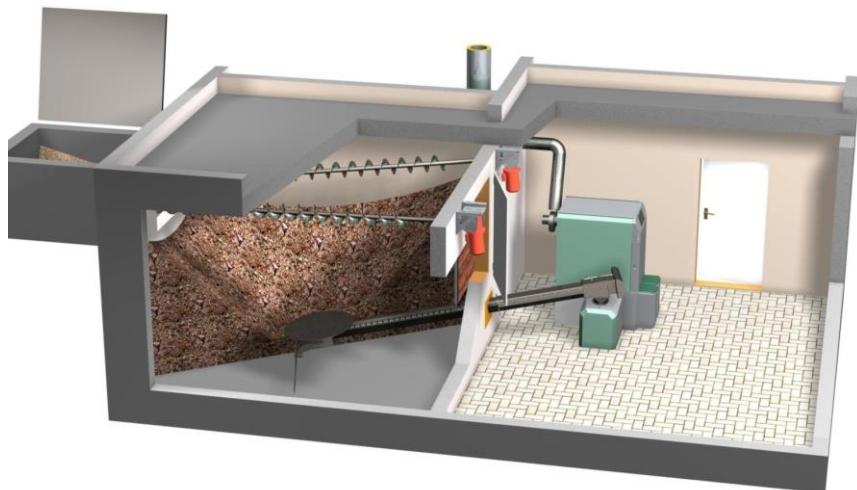
boiler - the size of the boiler and how much kg / h should be transported

Fuel - what material is used?

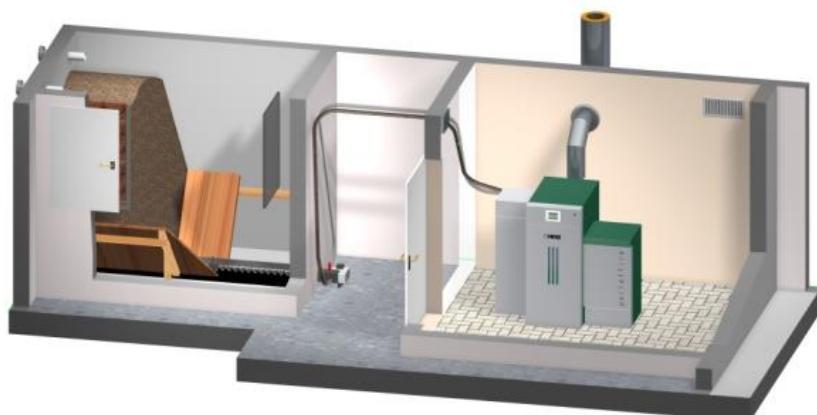
Place and Space - what do I have? long distances?



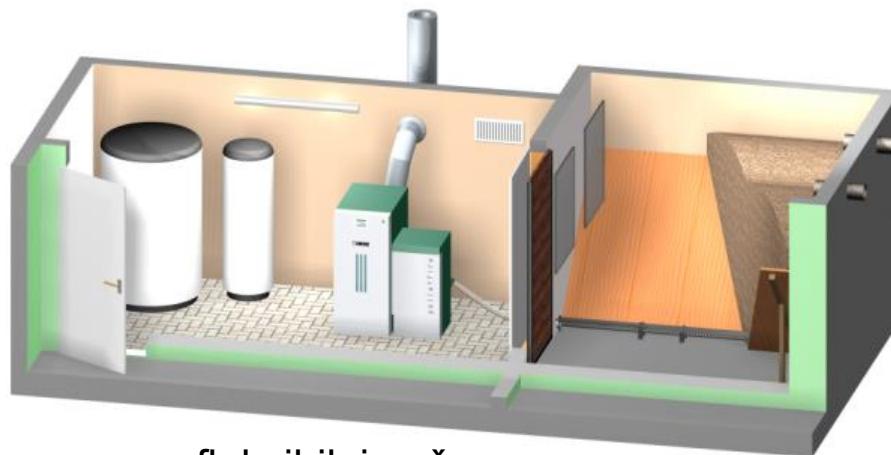
Različiti sustavi dopreme



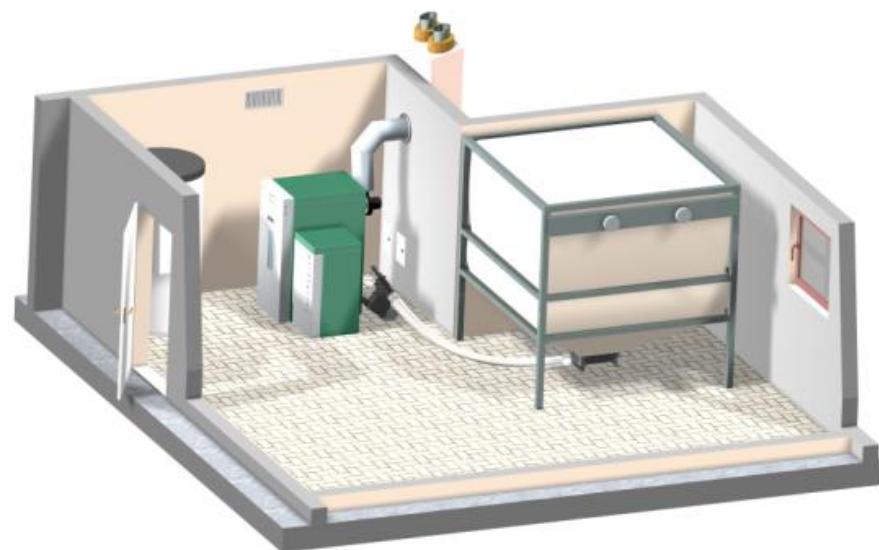
Puž s mješalicom
i dva puža za punjenje – za sječku i pelete
*Screw with agitator and two filling screws–
for use of wood chips and pellets*



Doprema usisavanjem – za pelete
Suction system for use of pellets

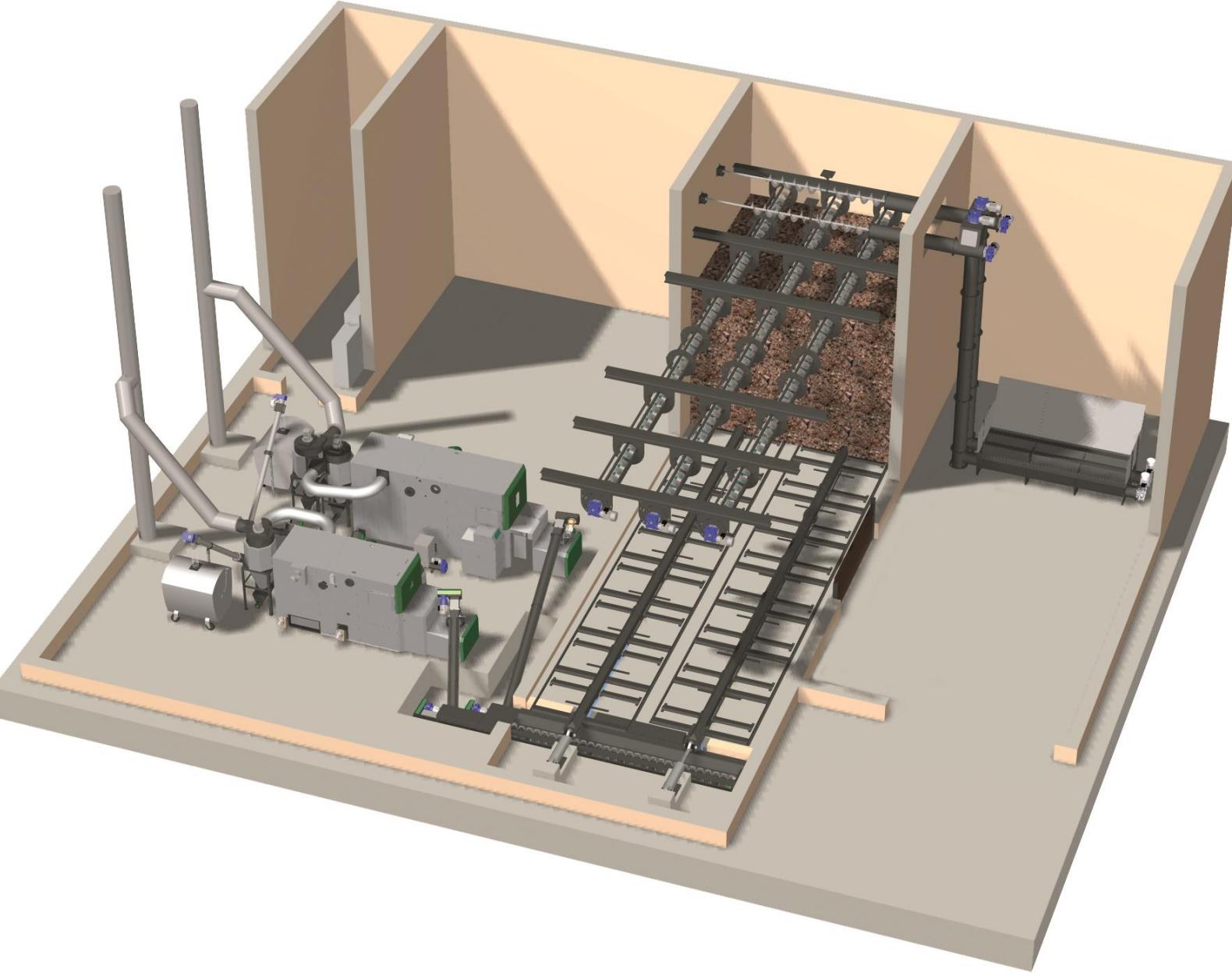


fleksibilni puž – za
pelete
*Flexible screw – for
pellets*



Doprema iz platnenog silosa – za pelete
Additonal bag silo system – for pellets

Različiti sustavi dopreme



- Dva kotla u kaskadi
- Hidraulički pomični pod
- Svaki kotao ima svoja dva puža koje ga „hrane“
- Punjenje skladišta preko vertikalnog sustava i dodatna 3 puža za distribuciju (~60m³/h)

- *Two boilers in cascade*
- *Hydraulic walking floor*
- *Every boiler has its own “feeding” system with two screws*
- *filling with vertical transportsystem and distributin screws (~60m³/h)*

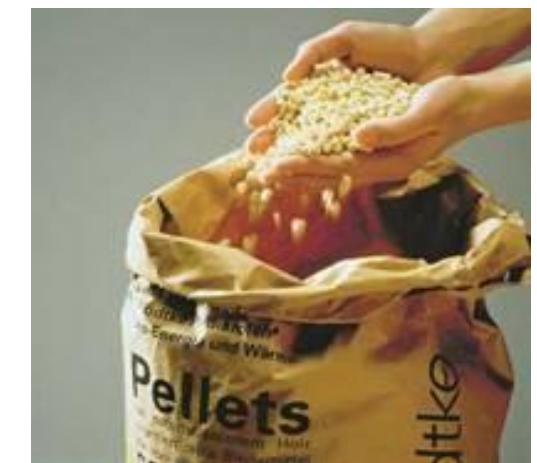


Drvena sječka
wood-chips

**Drvene
cjepance**
log-wood



**Drvene
pelete**
pellets



Zastoj vod - *water content:*

svježe - harvested: 40% - 60%

sušeno - air-dry: 15% - 20%

pelete - pellets: <= 10%



Heat values (comparison):

1 litra lož ulja / 1 Nm³ plin

1 liter oil / 1m³ gas

(~ 10 kWh/l or m³)

~ 2,5 kg sušeno drvo

~ 2,5 kg wood (dry)

(~ 4 kWh/kg)

~ 3 kg Drvene sječke

~ 3 kg woodchips

(~ 3,3 kWh/kg)

depending on wood type (soft/hard) and water content

~ 2 kg pellete

~ 2 kg pellets

(~ 4,9 kWh/kg)



Ovo je samo za
orientaciju!
*Values are for
orientation!*

Vrste goriva – different fuels

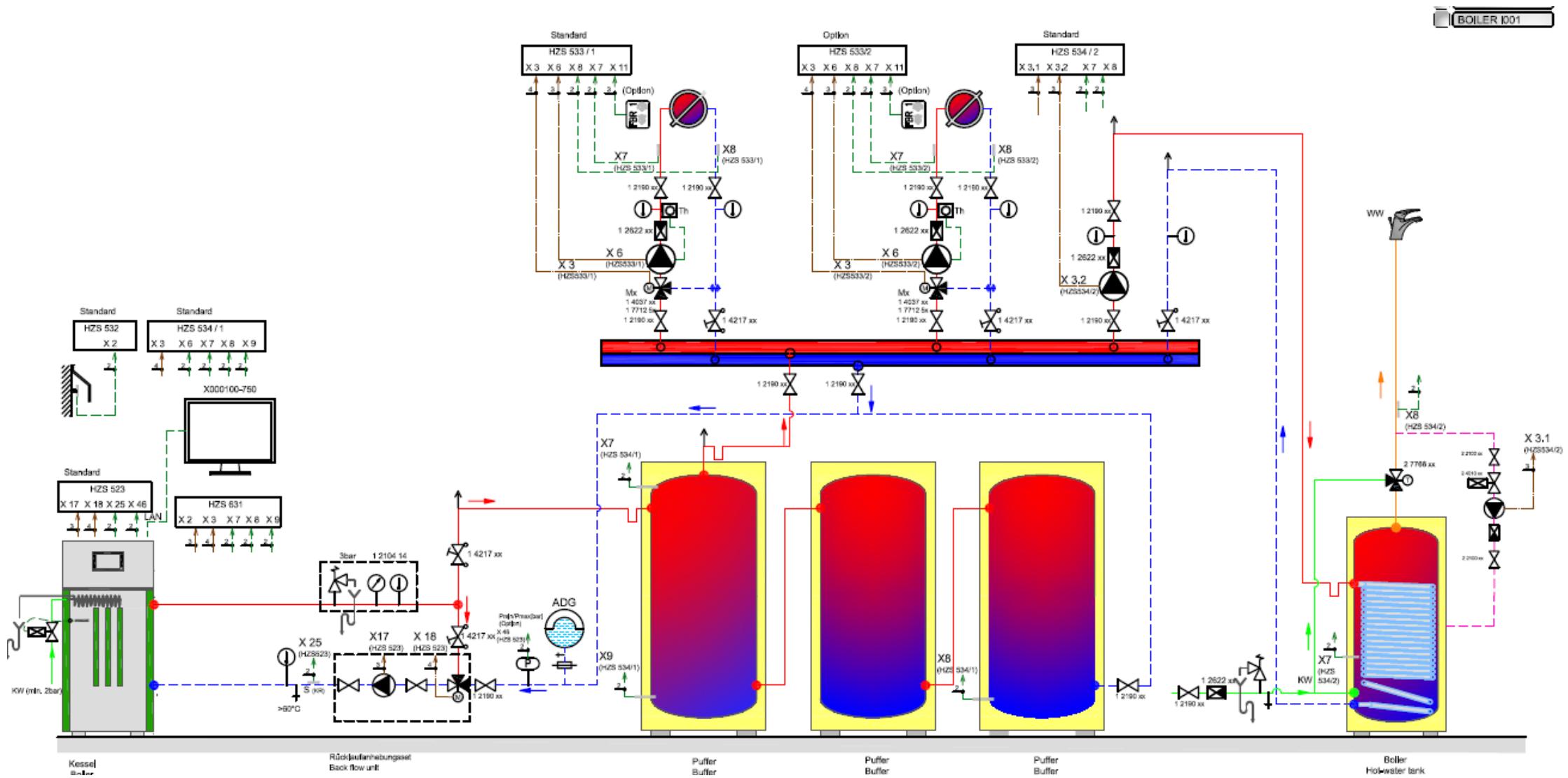
sustavi izgaranja →		RRF	SRF-S	SRF-H	TSRF	PSRF
	piljevina od brušenja	●			●	
	piljevina od rezanja	●			●	
	piljevina od hoblanja i frezanja	●	●		●	
	ostaci ploča od iverice	●	●		●	
	sječka iz šume	●	●		●	
	sječka iz poljopriv.		●	●		
	industrijska sječka		●	●		

sustavi izgaranja →		RRF	SRF-S	SRF-H	TSRF	PSRF
	kora			●		
	drobljeno, lomljeno i drvo za pakiranja			●		
	energetski biljni nasadi		●		●	
	ostatci u proizvodnji sokova, ostaci prešanja		●		●	
	peleti od drva	●				●
	industrijski peleti	●				●
	treset i agro peleti					●

Combustion systems →		RRF	SRF-S	SRF-H	TSRF
	Swarf	●			●
	Saw dust	●			●
	Shavings- millings	●	●		●
	Chipboard, MDF	●	●		●
	Virgin wood chips	●	●		●
	Chip from landscape managment		●	●	
	Industrial wood chips		●	●	

Combustion systems →		RRF	SRF-S	SRF-H	TSRF
	Bark			●	
	Shredded demolition & packaging wood			●	
	Wood baes energy crops (chaffed)		●		●
	Pomace, juice production residues		●		●
	Wood pellets	●			●
	Industrial pellets	●			●
	Turf pellets, agro-pellets				●

- peleti od šećerne trska – *pellets of sugar cane*
- peleti od ostataka suncokreta – *pellets of the remnants of sunflower*
- sjemenke bundeve – *pumpkin seeds*
- koštice od trešnje - *pits from cherries*
- grah, žitarice i dr. – *beans, cereals and others*
- peleti od treseta – *peat pellets*
- životinjski gnoj, kosti - *animal manure, bones*
- ...



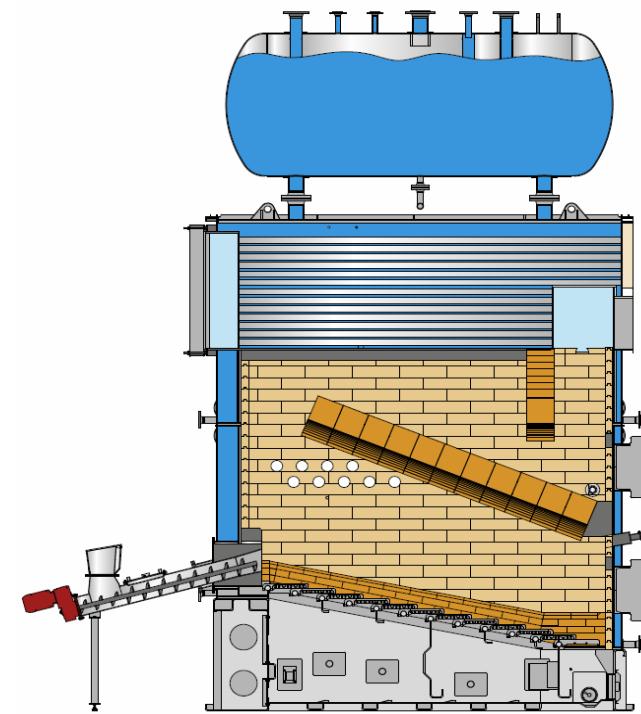
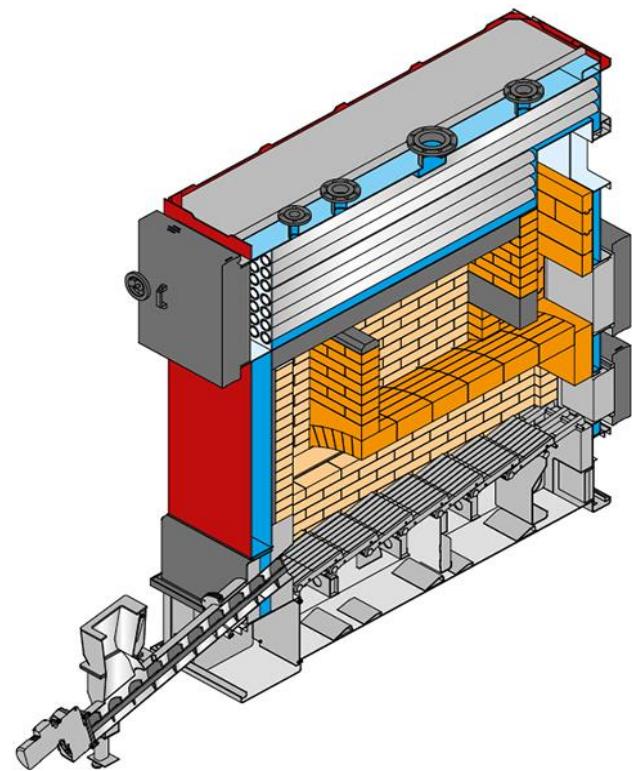
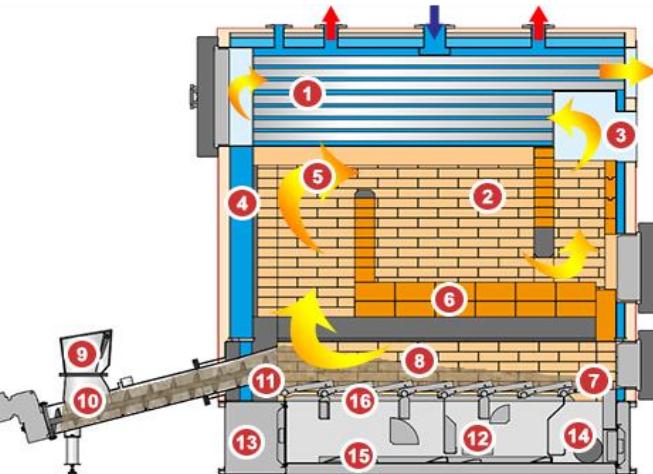
Primjer preporučene hidraulične sheme

Example of hydraulic diagrams

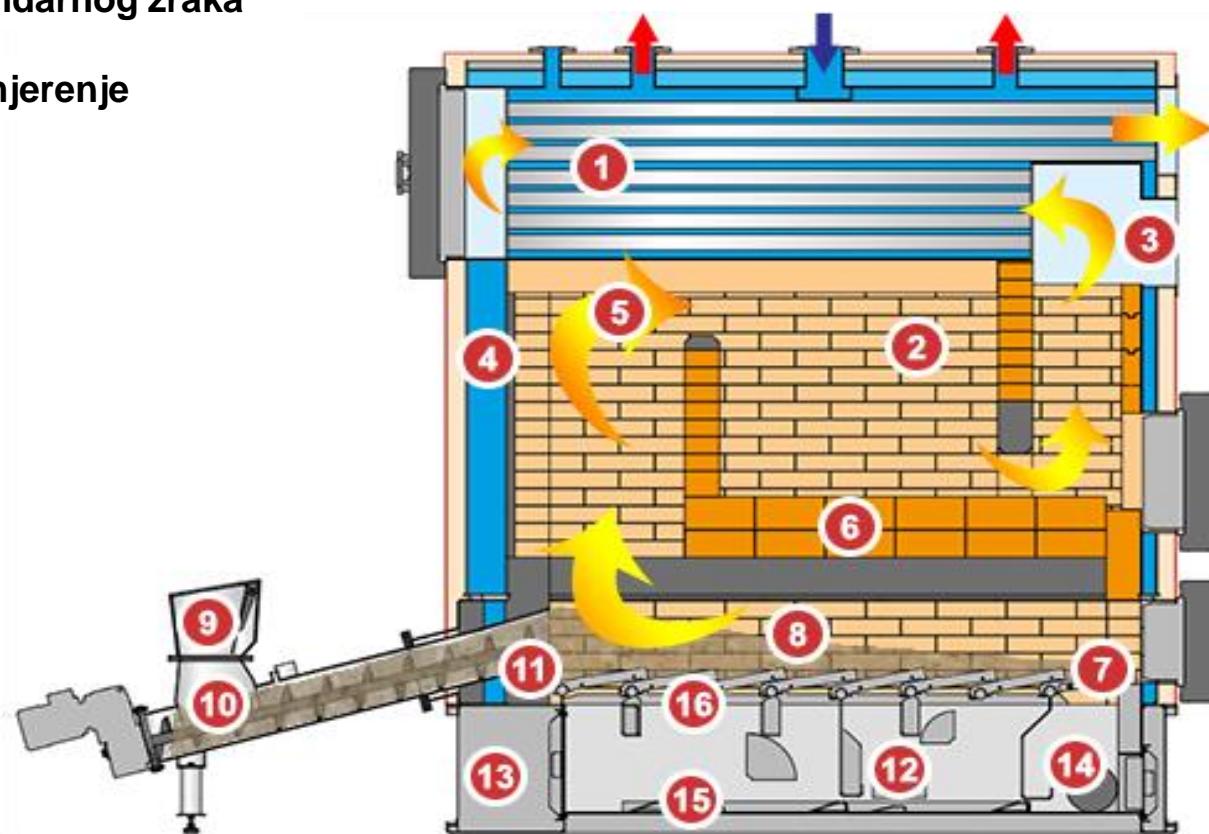
- Maksimalna sigurnost kroz servisne usluge jedan put godišnje od strane HERZ
 - Veća učinkovitost kroz optimalne postavke
 - Ispitivanje funkcije električnih i mehaničkih komponenti, kao i sigurnosnih uređaja TRVB 118
 - Nadogradnja novijih softvera
 - Dulji vijek zahvaljujući stručnim savjetima
 - Provjera tijela kotla i komponenti na trošenje
 - Redoviti servisi smanjuju troškove održavanja
-
- *The highest possible safety due to a plant service per year by the HERZ customer service*
 - *Better efficiency thanks to optimal settings*
 - *Functional testing of electrical and mechanical components as well as safety devices according to TRVB 118*
 - *software updates*
 - *Longer service life thanks to professional support*
 - *Check the boiler body and the parts for wear*
 - *More favorable to individual maintenance*

Tehnologija

Technology

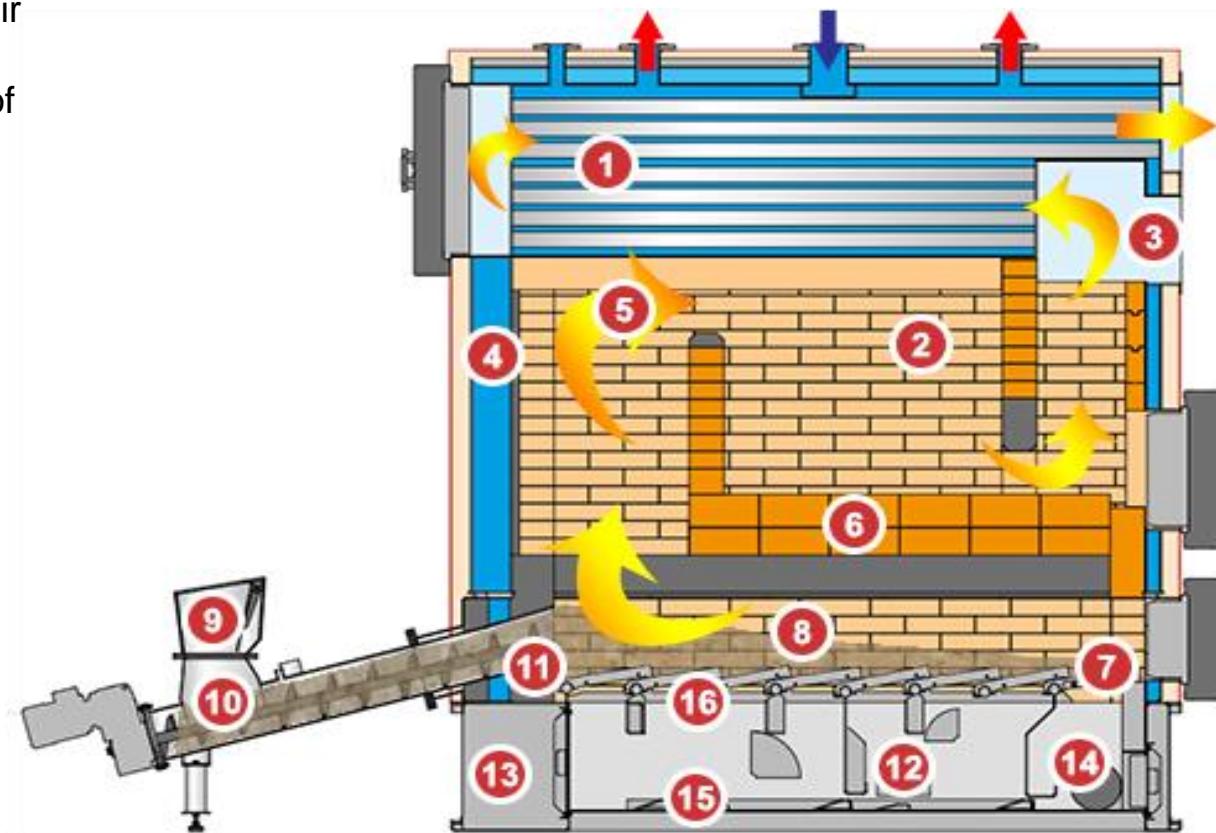


- | | | | | | |
|----------|-------------------------|-----------|----------------------------|-----------|-----------------------------|
| 1 | Izmjenjivačke cijevi | 7 | Istresanje pepela | 11 | Pomična rešetka od 150 kW |
| 2 | Šamotiranje | 8 | Ložište | 12 | Dovod primarnog zraka |
| 3 | Čišćenje izmjenjivača | 9 | Zaštita od povrata plamena | 13 | Industrijska kvaliteta |
| 4 | Zidovi obloženi vodom | 10 | Doziranje goriva | 14 | Puž za odvođenje pepela |
| 5 | Dovod sekundarnog zraka | | | 15 | Pomicanje pepela struganjem |
| 6 | krov za usmjerenje | | | 16 | Segmenti rešetke |



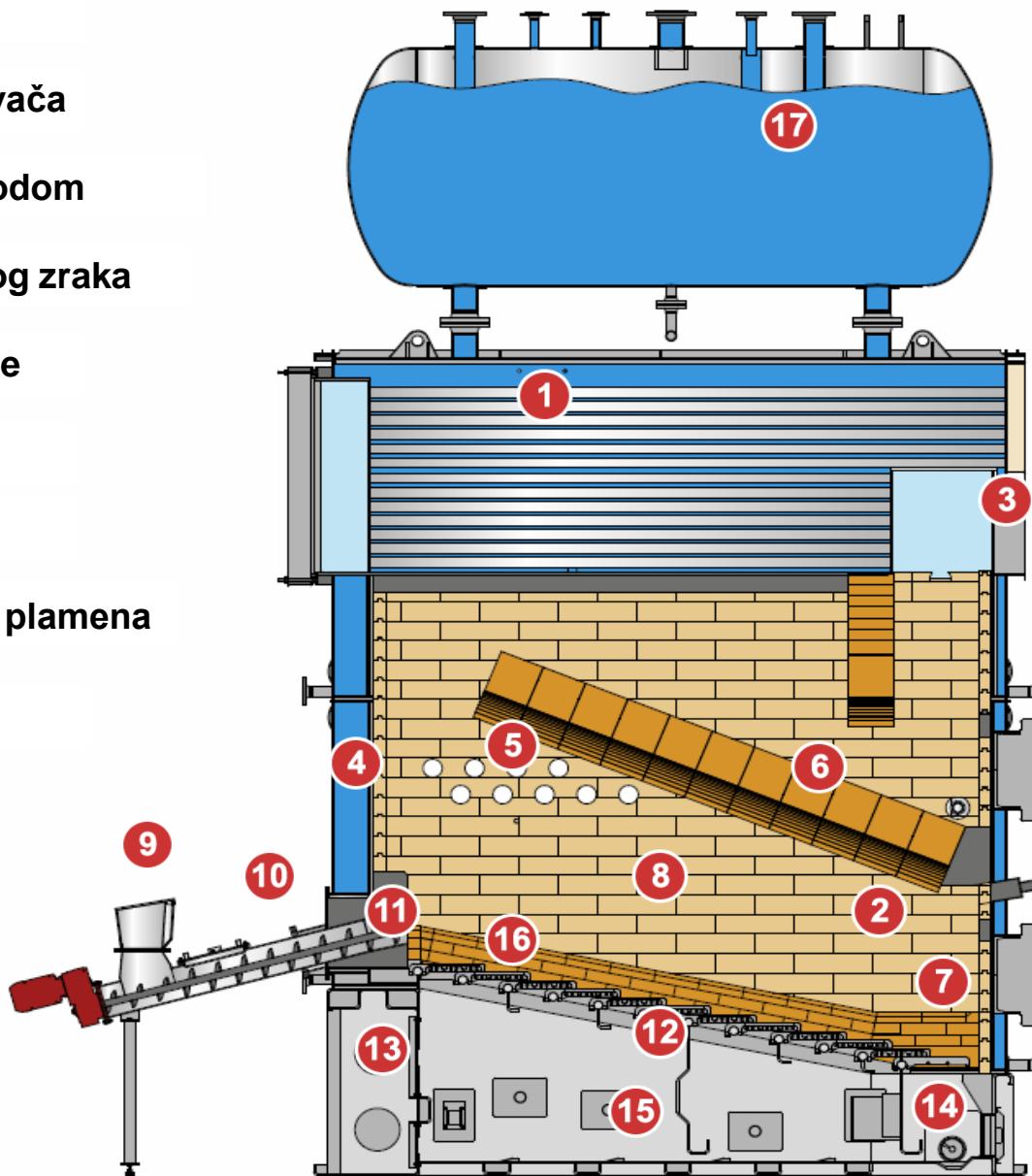
Warm- hot water boilers

- ① heat exchanger pipes
- ② firebrick
- ③ heat exchanger cleaning
- ④ water-carrying boiler walls
- ⑤ secondary air
- ⑥ radiation roof
- ⑦ grid sieve
- ⑧ combustion chamber
- ⑨ return fire protection
- ⑩ feed
- ⑪ sliding grate boiler from 150kW
- ⑫ primary air
- ⑬ industry quality
- ⑭ ash screw
- ⑮ ash slider
- ⑯ grate elements



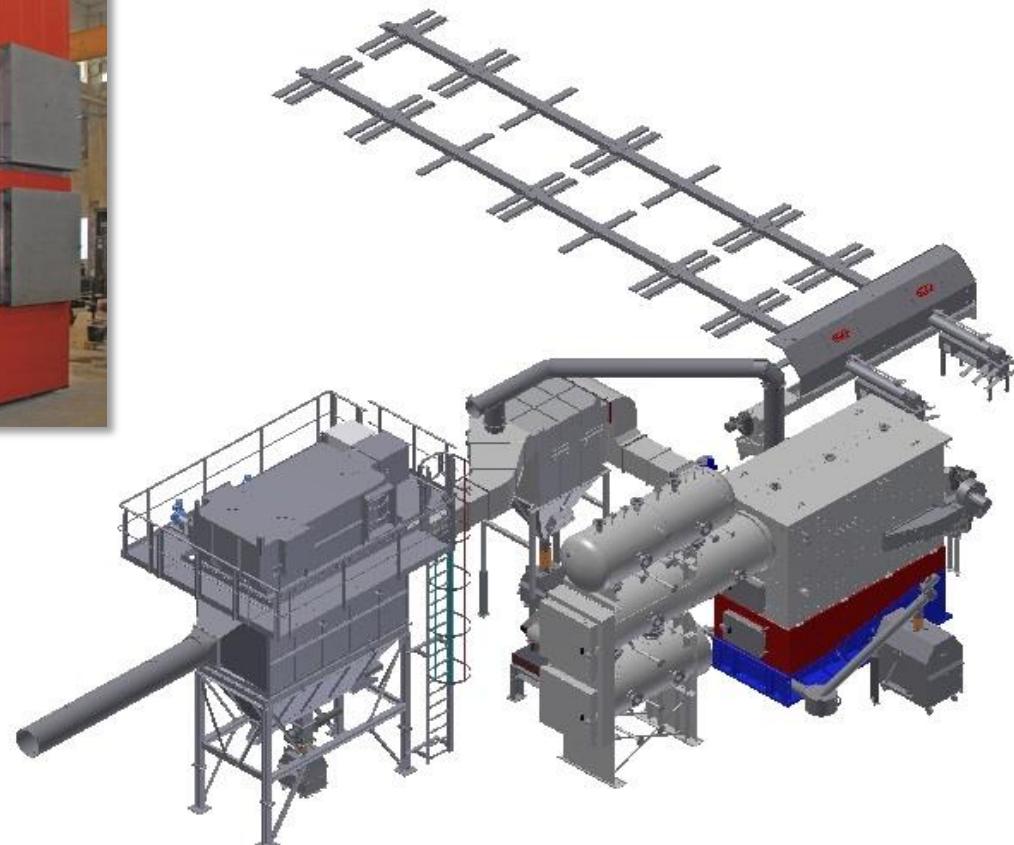
Kotlovi na zasićenu paru

- 1** Izmjenjivačke cijevi
- 2** Šamotiranje
- 3** Čišćenje izmjenjivača
- 4** Zidovi obloženi vodom
- 5** Dovod sekundarnog zraka
- 6** krov za usmjerenje
- 7** Istresanje pepela
- 8** Ložište
- 9** Zaštita od povrata plamena
- 10** Doziranje goriva



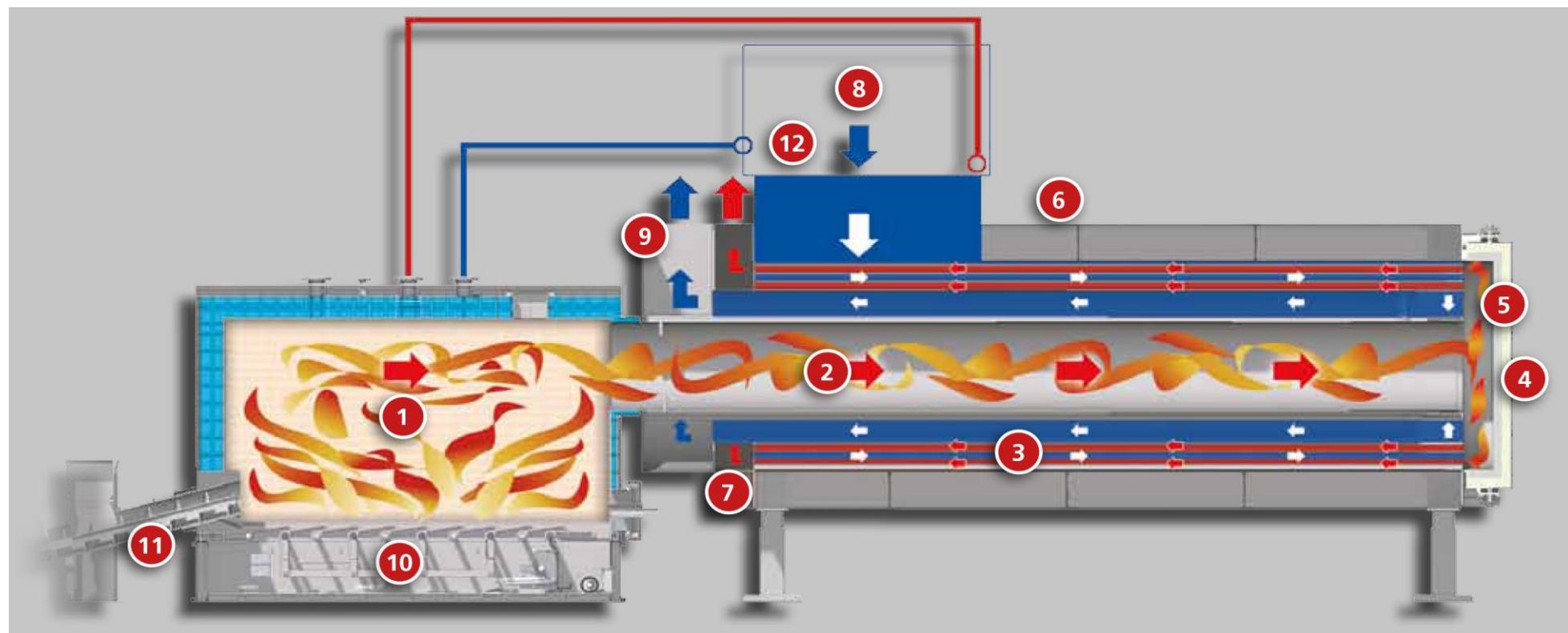
- 11** Pomična rešetka od 150 kW
- 12** Dovod primarnog zraka
- 13** Industrijska kvaliteta
- 14** Puž za odvođenje pepela
- 15** Pomicanje pepela struganjem
- 16** Segmenti rešetke
- 17** Kupola pare - spremnik

Kotlovi na zasićenu paru
saturated steam boilers



Zračni izmjenjivač topline

- | | | |
|---------------------------------|-------------------------------|--|
| 1 Ložište obloženo vodom | 5 Obilazna komora | 9 Odvod svježeg zraka |
| 2 Plamena cijev | 6 Zračni izmjenjivač | 10 Sustav za izgaranje |
| 3 Izmjenjivačke cijevi | 7 Izlaz dimnih plinova | 11 Doziranje goriva |
| 4 Vrata za čišćenje | 8 Dovod svježeg zraka | 12 Predgrijavanje svježeg zraka |

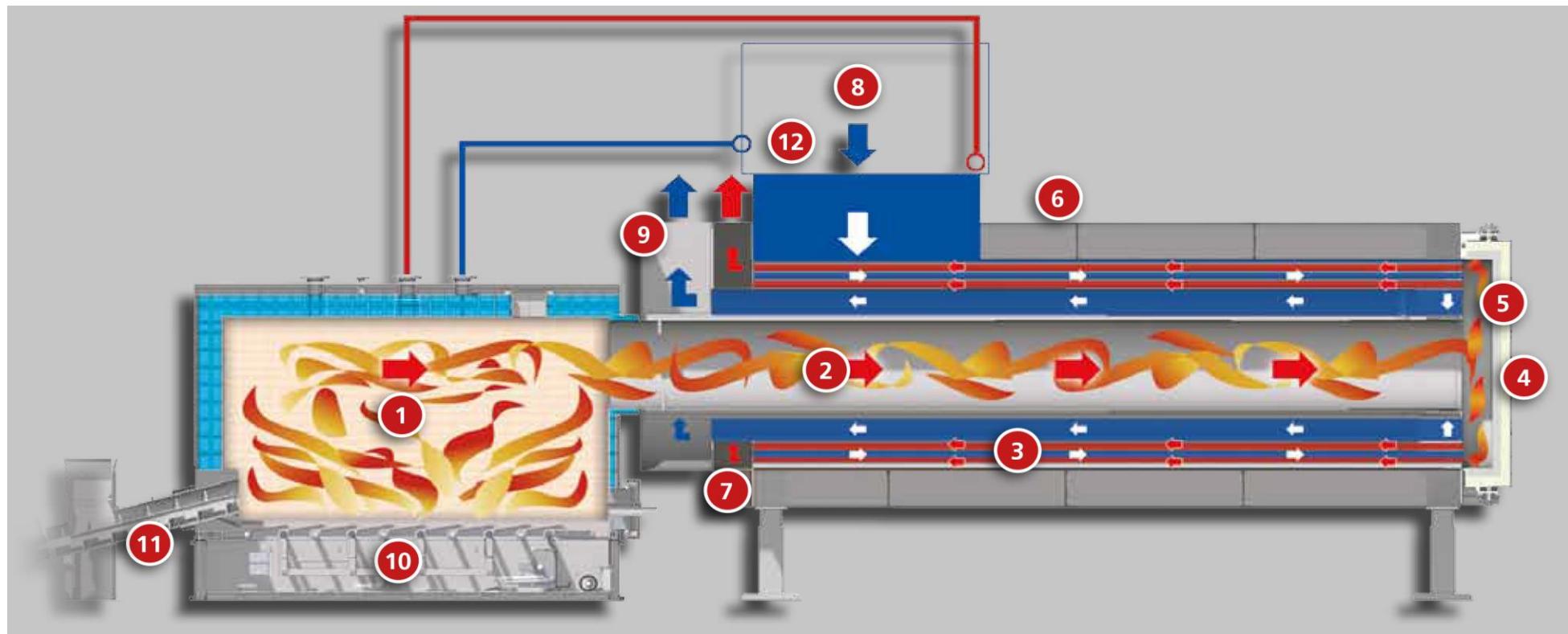


Air heat exchanger

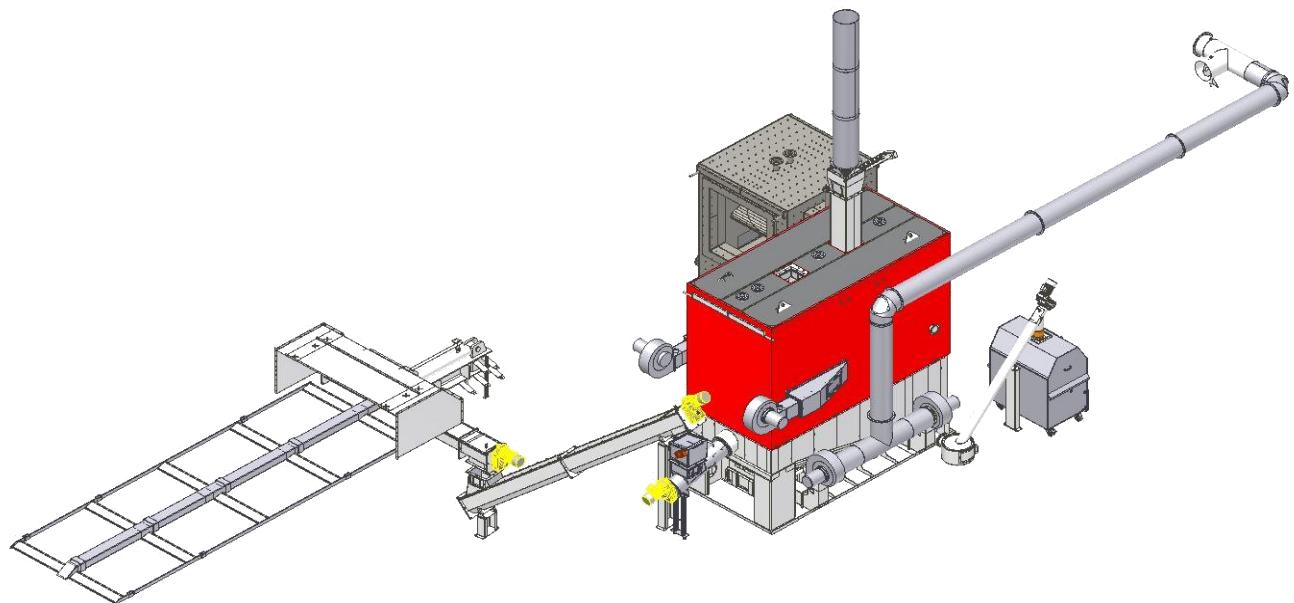
- ① water-carrying combustion chamber
- ② flame tube
- ③ heat exchanger pipes
- ④ maintenance door

- ⑤ reversing chamber
- ⑥ air heat exchanger
- ⑦ flue gas output
- ⑧ fresh air inlet

- ⑨ fresh air output
- ⑩ firing system
- ⑪ feed
- ⑫ air preheating

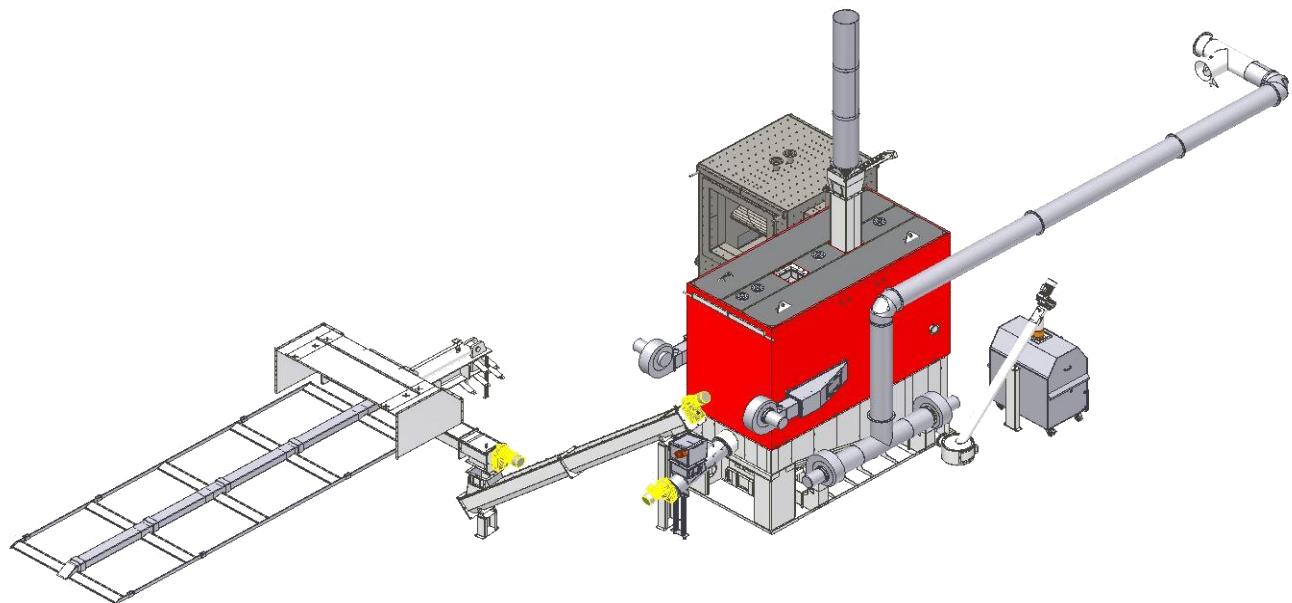


- Ložišta ložena biomasom
- Dimni plinovi za procese
- Optionalno s miješajućom komorom



Combustion chamber

- biomass-fired combustion chamber
- flue gases for processes
- optional with mixing chamber

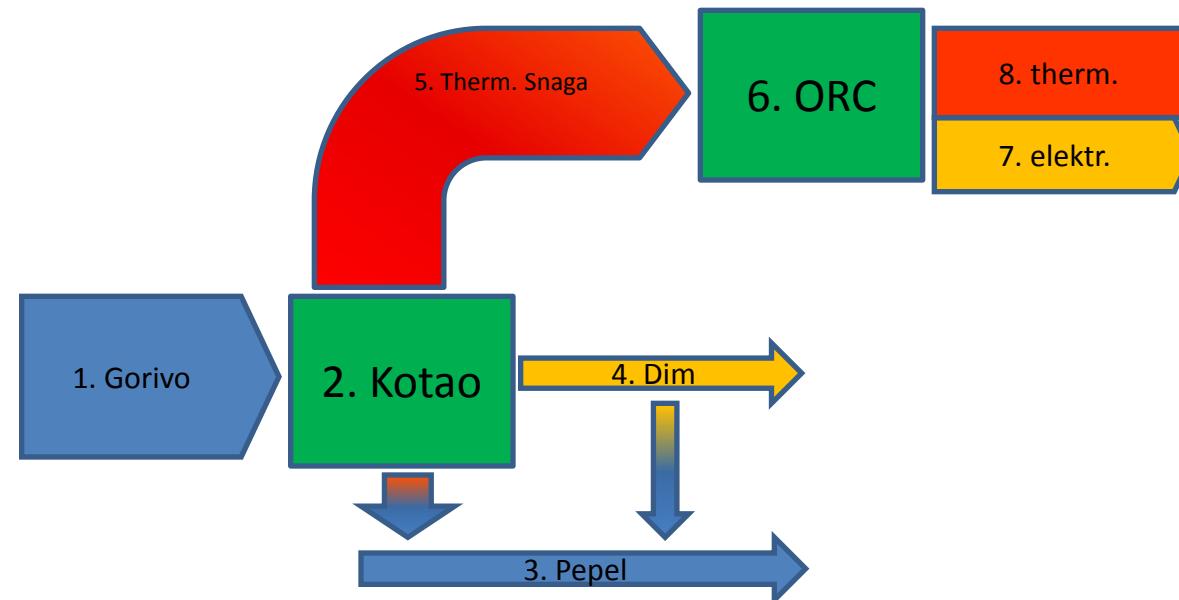


Direktni sustav:

- Upotreba plinova izgaranja u procesu
- manje gubitke topline

Indirektni sustav:

- korištenje drugih medija za ORC proces
tople vode
para
vreo zrak/dim
vruće ulje
- postoji mnogo načina za ORC



Direct system:

The use of combustion gas in the ORC process driving

less heat loss

Indirect system:

drive using other media in the process of ORC

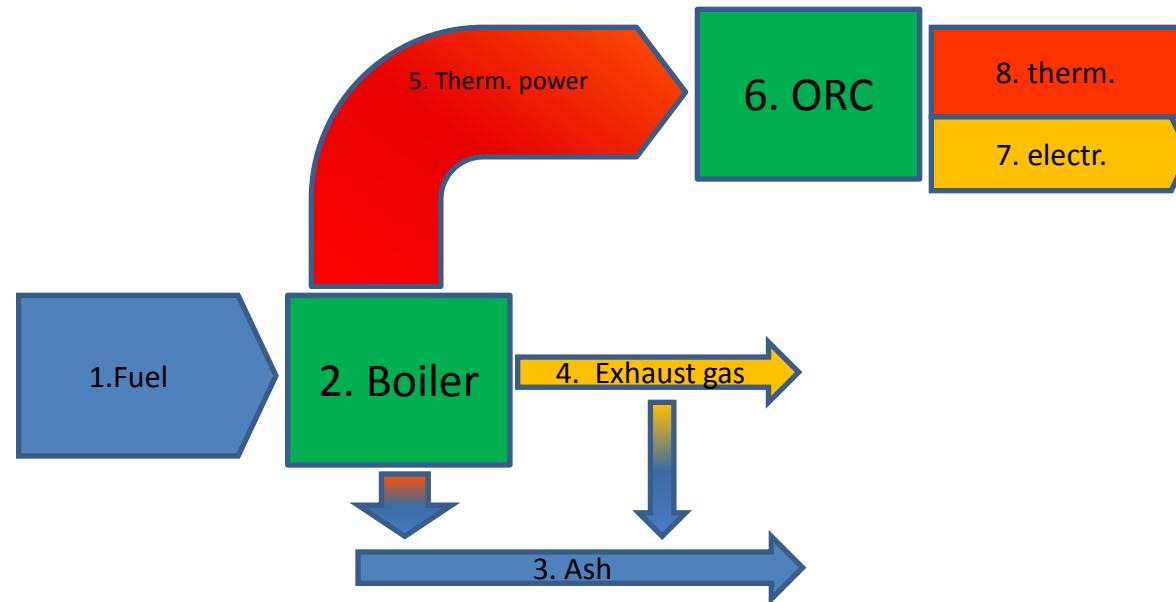
hot water

steam

hot air / smoke

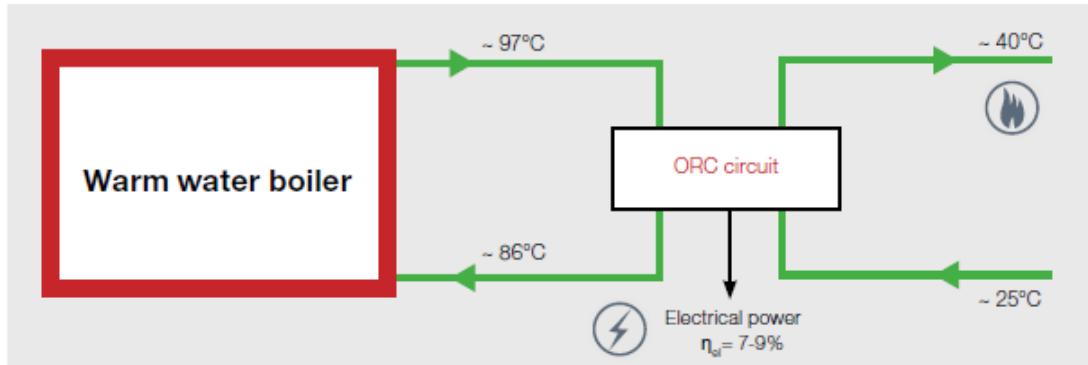
hot oil

Although many ways to ORC

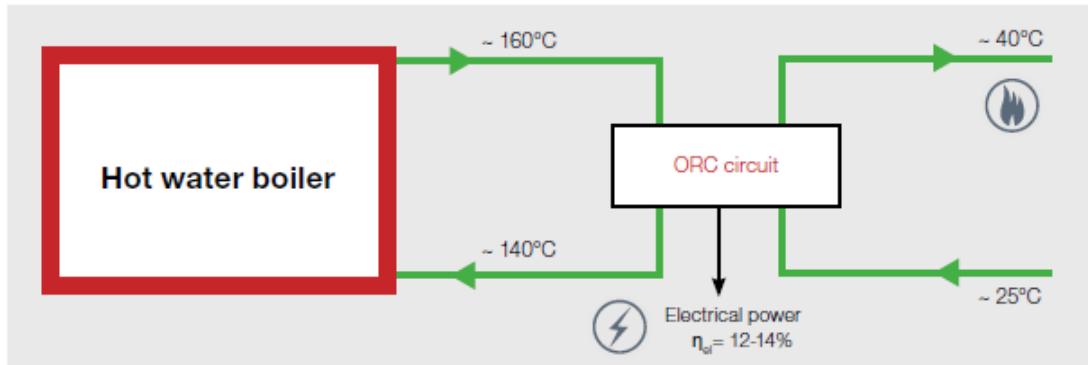


Kako izgleda ORC sistem?
How looks like this ORC?

LOW TEMPERATURE-ORC-SYSTEM with warm water boiler

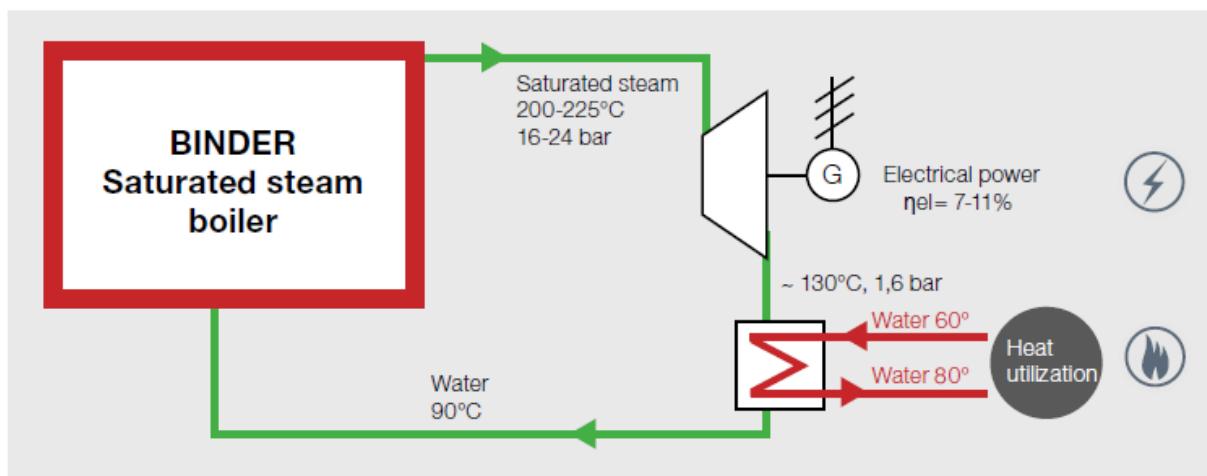


LOW TEMPERATURE-ORC-SYSTEM with hot water boiler



HIGH TEMPERATURE SYSTEM

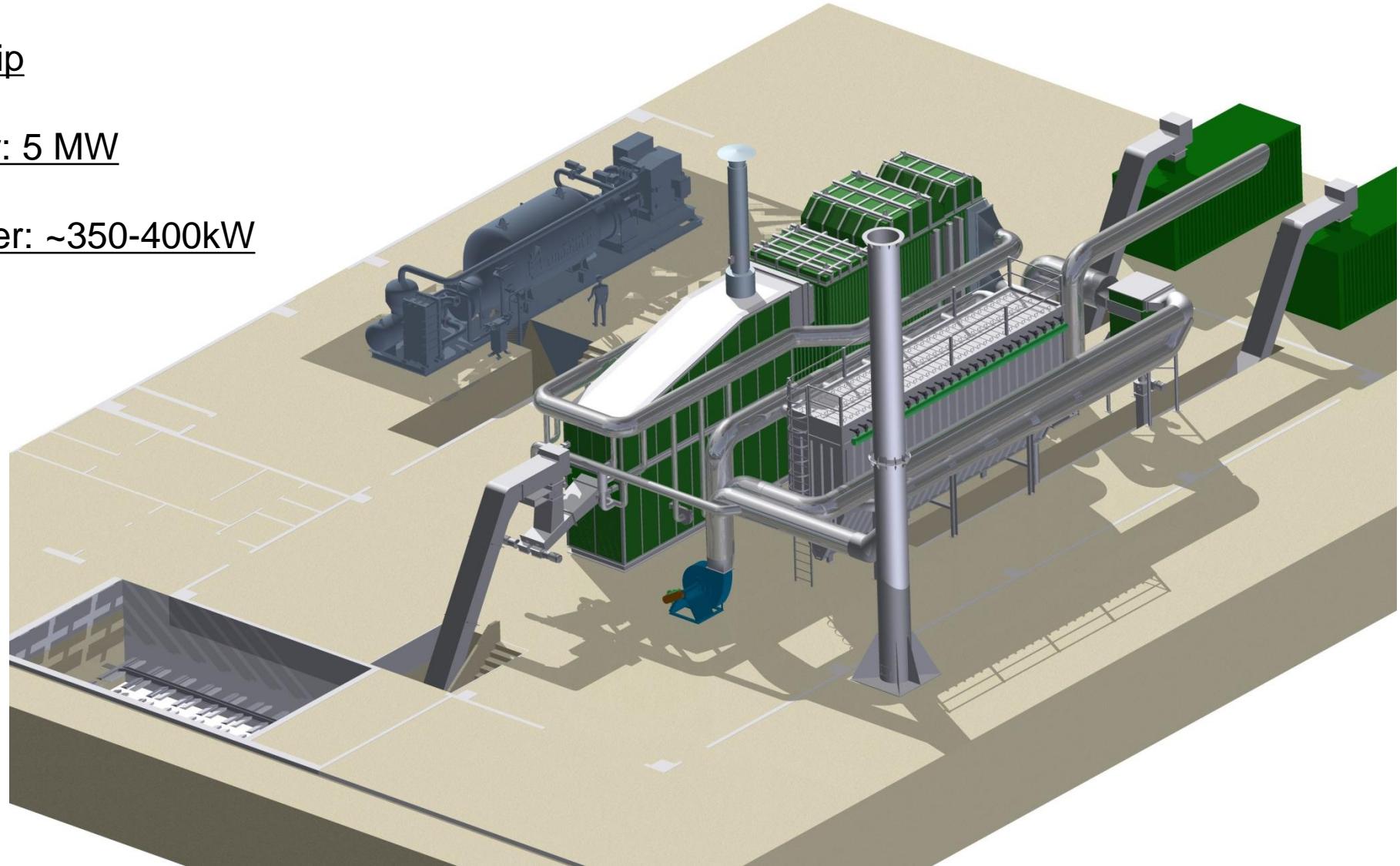
Saturated steam turbine: back pressure turbine



fuel: wood chip

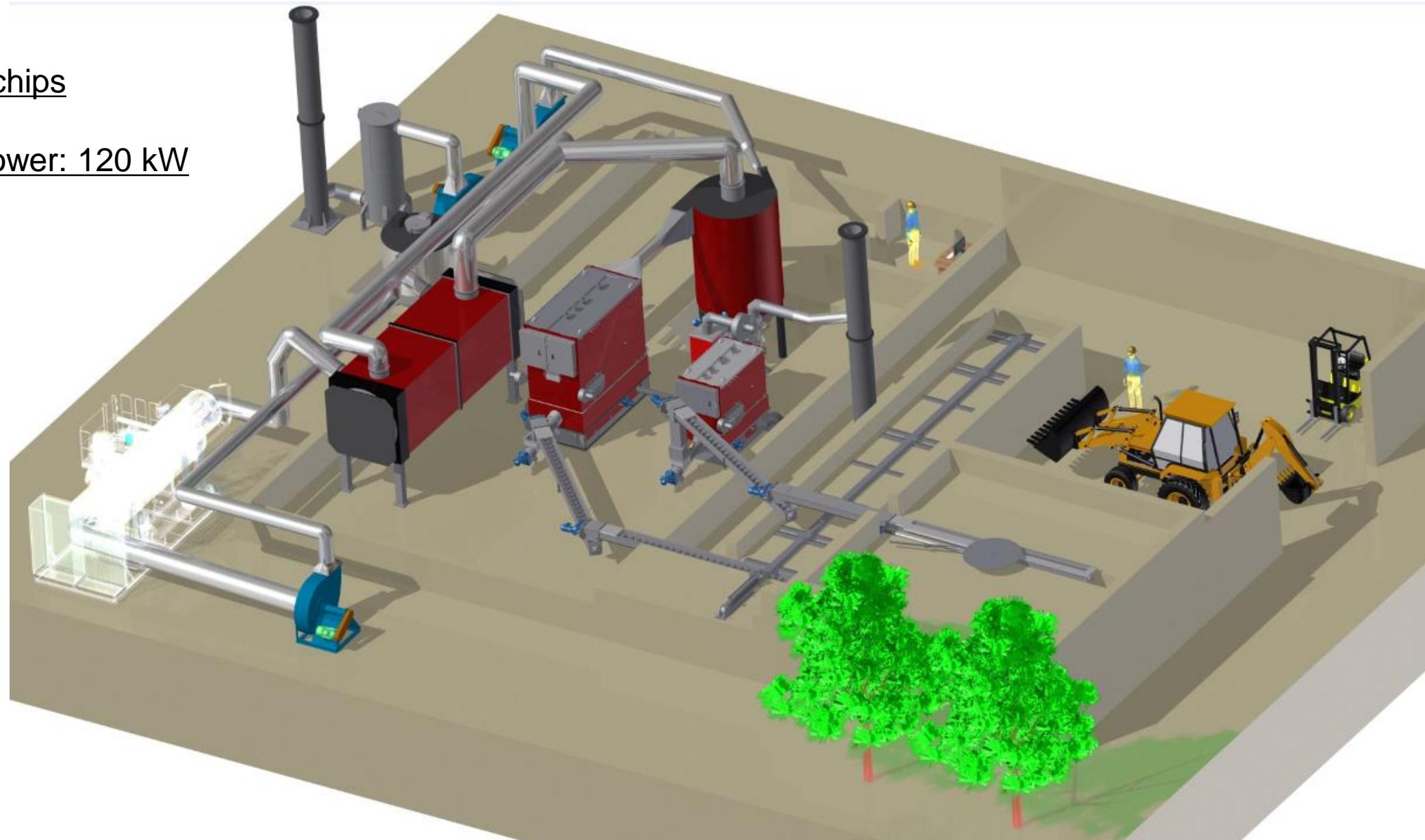
thermal power: 5 MW

electrical power: ~350-400kW



fuel: wood chips

electrical power: 120 kW



Toplana u Pokupskom



Namjena:

Toplifikacija naselja Pokupsko

Doprema sječke pomičnim podom (veličina P45)

Automatski odvoz pepela u vanjski spremnik

**BioFire 1000 BioControl
HR-10414 Pokupsko
Snaga 1000 kW
Toplana na biomasu
Projekt izveden u suradnji s
EU fondovima**





**BINDER RRK 2500-3000
HR-42250 LEPOGLAVA
Snaga 3000 kW
Kotlovnica na biomasu
u kaznionici Lepoglava**

Namjena:

Za potrebe grijanja kaznionice Lepoglava

Za tehnološke potrebe

Doprema sječke pomičnim podom

Sječka veličine P100





Montaža

Korištenje teške mehanizacije

BINDER RRK 2500-3000

HR-42250 LEPOGLAVA

Snaga 3000 kW

**Kotlovnica na biomasu
u kaznionici Lepoglava**



- Engleska, plastenici
- Učin: 300 kW
- Gorivo: drvna sječka, biljni energetski nasadi
- Ušteda: ca. 50.000 l lož ulja
- 130 tona CO₂ /godina



- Mađarska, proizvođač prozora
- Snaga: 2.200 kW
- Gorivo: Drvni otpad, ploče od iverice, MDF-ploče
- Ušteda: ca. 615.000 l lož ulja
1,8 tona CO₂ /godina



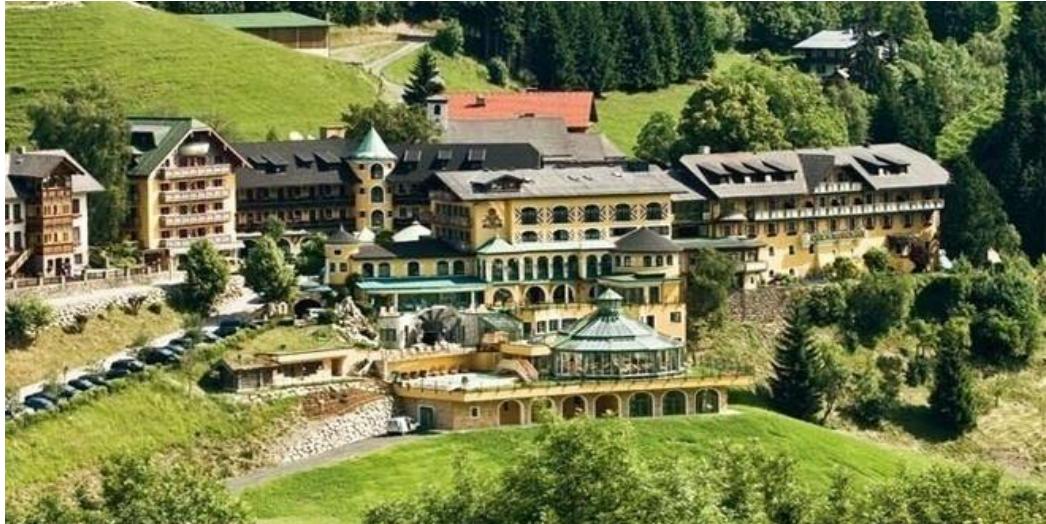
- Spanjolska, Industrija kozmetike
- Snaga: 500 kW
- Gorivo: peleti
- Ušteda: ca. 72.000 l lož ulja
220 tona CO₂ /godina



- Kanada, platenici
- Učin: 6.000 kW
- Gorivo: drvena sječka, piljevina
- Ušteda: ca. 1.500.000 l lož ulja
4.500 tona CO₂ /godina



- Austrija, wellnes hotel
- Snaga: 700 kW
- Gorivo: drvna sječka
- Ušteda: ca. 220.000 l lož ulja
640 tona CO₂ /godina



- Austrija, tvornica čokolade
- Tip kotla: kotao na zasićenu paru RRK 640-850
- Snaga: 840 kW,
- Gorivo: drvena sječka, kakao i luska
- Ušteda: ca. 200.000 l lož ulja
280 tona CO₂ /godina



- Austrija, sušenje kukuruza i sjemenki bundeve
- Tip kotla: kotao LWT
- Učin: 1.650 kW,
- Gorivo: drvna sječka
- Einsparung: ca. 100.000 l lož ulja
267.000 kg CO₂ /godina



- Austrija, Toplana u Tillmitsch
- Snaga: 800 kW
- Gorivo: drvna sječka
- Prikључeno potrošača: 1.700 kW
- Ušteda: ca. 100.170 l lož ulja / godini



Contractor Penz

- Bärnbach
- Snaga: 3.000 kW
- Gorivo: drvna sječka, životinjski gnoj (konjski)
- Ušteda: 2200 to CO₂ /godina



KRAJ - END

*Hvala na pažnji!
Thanks for attention!*



HERZ-Biomassekessel
unterbieten die strengsten
Emissionsvorschriften.



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