

\* ... over technology partners



**THE COMBUSTION SPECIALIST**

- ✓ Turn-key solution out of one hand
- ✓ Over 25 year experience in AGRO fuels
- ✓ Over 100 boiler in operation



**THE ORC SPECIALIST**

- ✓ CHP module out of one hand
- ✓ Over 30 year experience
- ✓ Over 250 plants in operation



**AGRO POWER PLANT ORC**

**THE PERFECT SOLUTION FOR  
ALL BIOMASS FUELS**



## SUITABLE FOR MANY CUSTOMERS



### AGRICULTURE

- Large to medium sized farms for production of agro-fuels
- Heat for farm building, green houses, grain dryers etc.



### PROCESSING INDUSTRY

- Dairys, breweries, meat processing, pelletizing plants, etc.
- Heat, steam and cooling for process and cold storage house



### INDUSTRIAL PARKS

- New parks in development or modernisation of existing one's
- Heat, steam and cooling for process and cold storage house

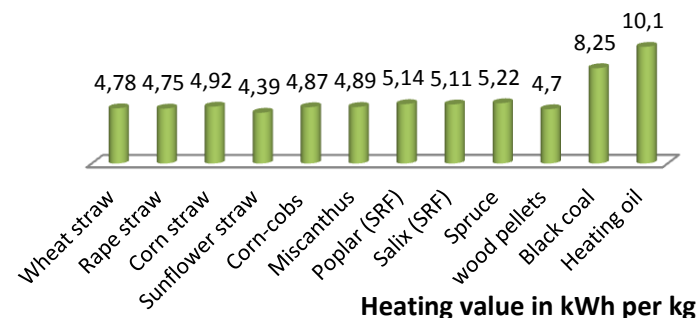


### DISTRICT HEATING / MUNICIPAL BUILDINGS

- New district heating networks/rehabilitation of old networks
- heat and cooling for cities (starting from 6.000 residents)



## SUITABLE FOR MOST BIOMASS FUELS



Heating value in kWh per kg

### AGRO FUELS

- ✓ Straw: i.e. wheat (~ 2.5 t/ha.a), corn (~4.5 t/ha.a)
- ✓ Corn cobs (~ 2.0 t/ha.a)
- ✓ Energy plants: i.e. Miscanthus (~ 15 t/ha.a)
- ✓ Agricultural waste: i.e. chicken litter / manure

### WOOD FUELS

- ✓ Saw mills / forests: Chips, saw dust, bark
- ✓ Short rotation plantations (~18 t/ha.a)



## AGRO POWER PLANT CONCEPT



### Process overview

#### 1 bunker / biomass infeed

- > automatic biomass infeed
- > push or cargo floor
- > storage turn over 2 – 3 days

#### 2 dryer

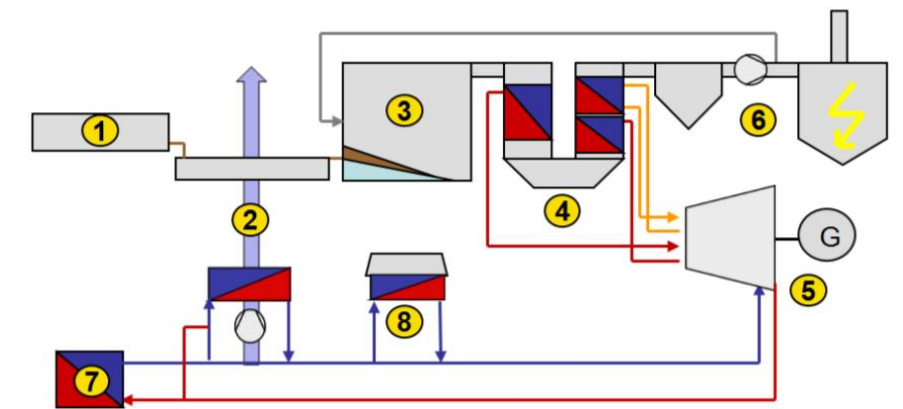
- > pre-drying of biomass
- > innovative vibrating biomass dryer
- > reduction of fuel consumption
- > optimization of electrical efficiency
- > high flexibility in hot water system

#### 3 fire box / combustion

- > optimized fire box and grate for different biomass blends
- > modern combustion control systems
- > low emissions and high fuel utilization

#### 4 thermal oil boiler

- > high oil temperature (310 – 320°C)
- > two heating circuits (high / low temp)
- > highest possible efficiency (~ 80%)



#### 6 air cleaning device

- > multi-cyclone and ESP
- > fulfills all EU and national regulations

#### 5 ORC

- > Information on separate sheet

#### 7 distribution net

- > distribution net and heat consumers of the customer

#### 8 cooling device

- > high power production when heat demand is low (i.e. summer)
- > high electrical efficiency (reduction of return water temperature)

PLANT	FIELD DEMAND (ha)			POWER PRODUCTION (kW)	HEAT PRODUCTION * (kW)
	Wheat straw	Corn cobs	Short rotation		
ORC 6	2.800	3.700	400	600	2.600
ORC 7	3.400	4.400	450	700	3.000
ORC 10	4.500	6.000	650	1.000	4.200
ORC 18	8.500	11.000	1.200	1.850	7.800

\* ... fuel pre-drying might reduce heat production

