

*IEA Bioenergy Task 33  
Workshop on Waste gasification*

*Poultry manure gasification  
with a small CHP plant.*

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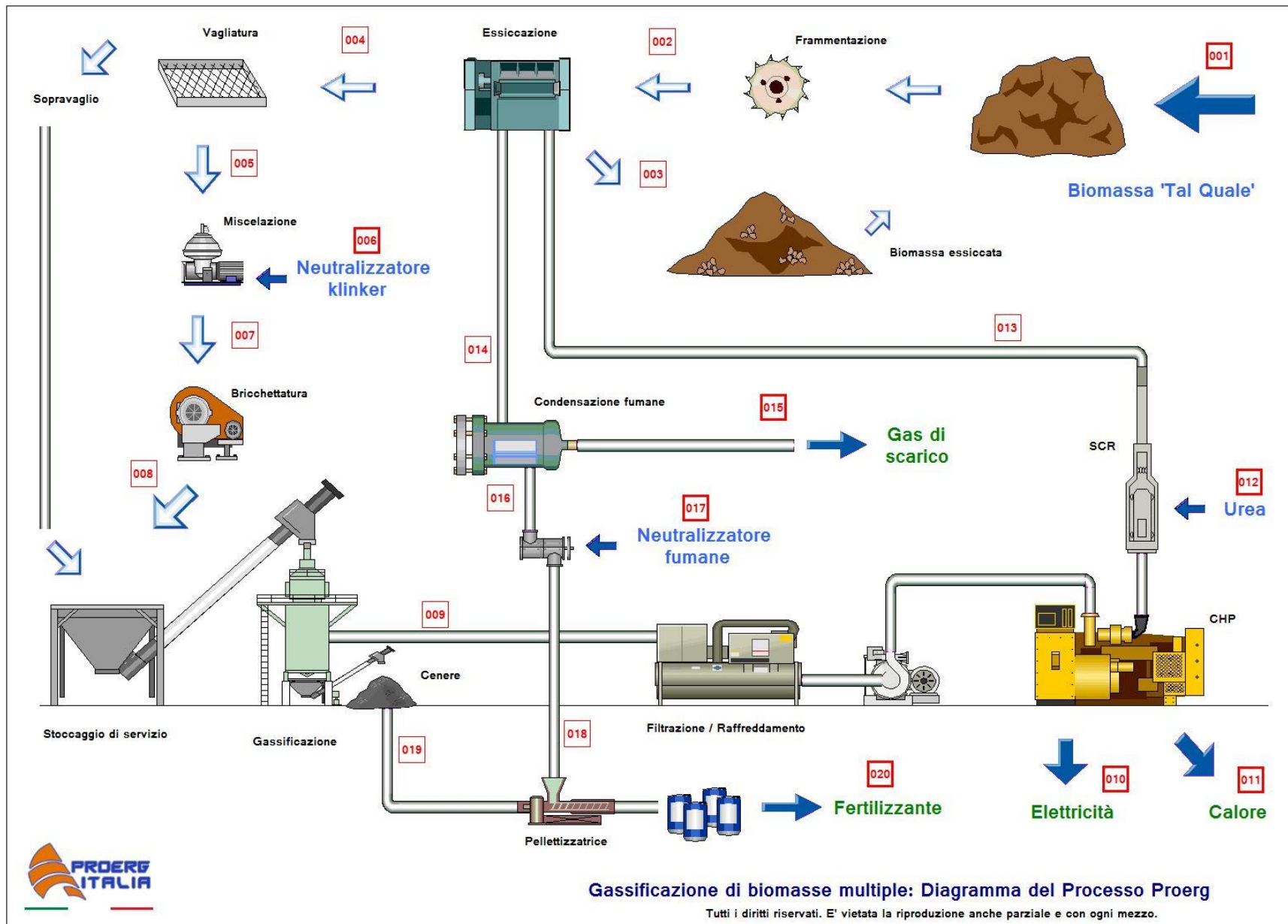
## Plant main features

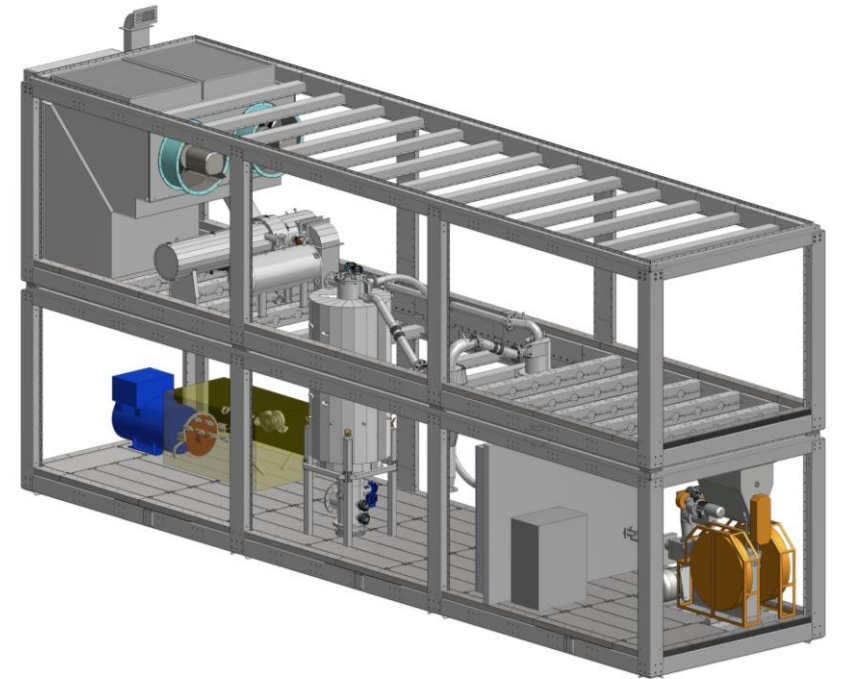
- down draft gasifier
- Otto cycle engine

## Biomass feedstock

- waste wood
- poultry manure
- sewage sludge
- dried fruit shells
- grape waste
- coffee waste
- olives cake

Pos.	Denominazione	u.m.	Valore
010	Electrical Power	kW	200
011	Thermal power	kW	281
004	Poultry manure consumption	kg/h	293
008	Gasifier consumption	kW	733
009	CHP consumption	kW	557
-	Mechanical brake power	kW	209
010	Electrical power	kW	200
-	Heat recovery from engine cooling	kW	119
-	Exhaust gas heat recovery to 150° C	kW	116
-	Exhaust gas heat recovery from 150° C to 70° C	kW	26
-	Producer gas heat recovery	kW	20
-	Gasification losses	kW	156
-	Engine losses	kW	87
-	Generator losses	kW	9
-	Electrical efficiency cosf=1	%	27,3
-	Thermal efficiency	%	38,3
-	Fuel total usable energy	%	65,6
-	Alternator efficiency cosf=1	%	95,7





## Poultry manure

- wood litter
- straw litter
- rice husk litter
- manure without substrate  
(laying hens)

## Main characteristics

- high ammonia content
- high ash content
- low ash fusibility temperature

Proximate analysis				
			As received	Dry
	Moisture	% wt	33,2	
	Ash	% wt	9,2	13,8
	Volatile Matter	% wt	45,4	67,9
	Fixed Carbon	% wt	12,2	18,3
Ultimate analysis				
	Carbon	% wt		35,6
	Hydrogen	% wt		4,6
	Nitrogen	% wt		6,3
	Oxygen	% wt		14,4
Ash analysis				
	Calcium	mg/kg	51.200	
	Phosphorus	mg/kg	34.200	
	Potassium	mg/kg	16.800	



Mineral additives			
	MgO	% wt	< 0,25
	CaO	% wt	< 0,25
	CaCO <sub>3</sub>	% wt	0,75
	SiO <sub>2</sub>	% wt	>1

