RONDA
ENGINEERING

E C O G A S G E N E R A T O R

Biomass to Heat and Power

Experience report
Innsbruck, 4th May 2017

RONDA ENGINEERING

Ronda Engineering, italian north est side company,
is an OEM CHP plants from biomass.

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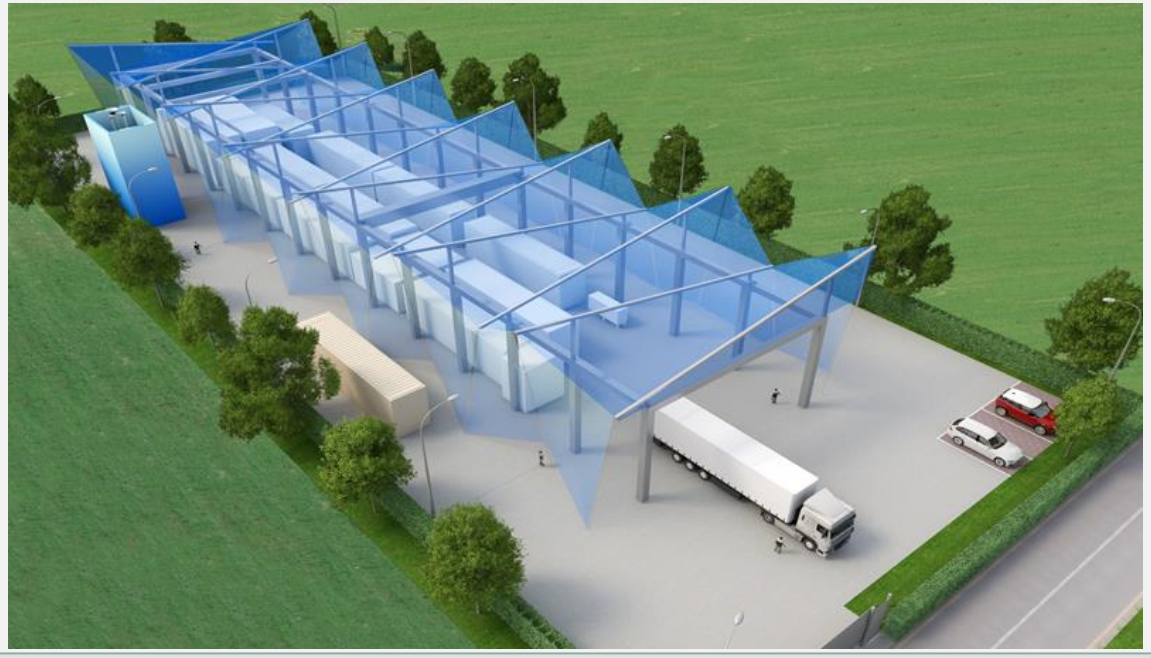
ECOGASGENERATOR

TYPE OF PLANT

Ronda Engineering pyrolisis and gassification plant
with horizontal screw, indirect fired

Syngas end use
in Otto cycle engines of 1.500 or 3.000 kW electrical power



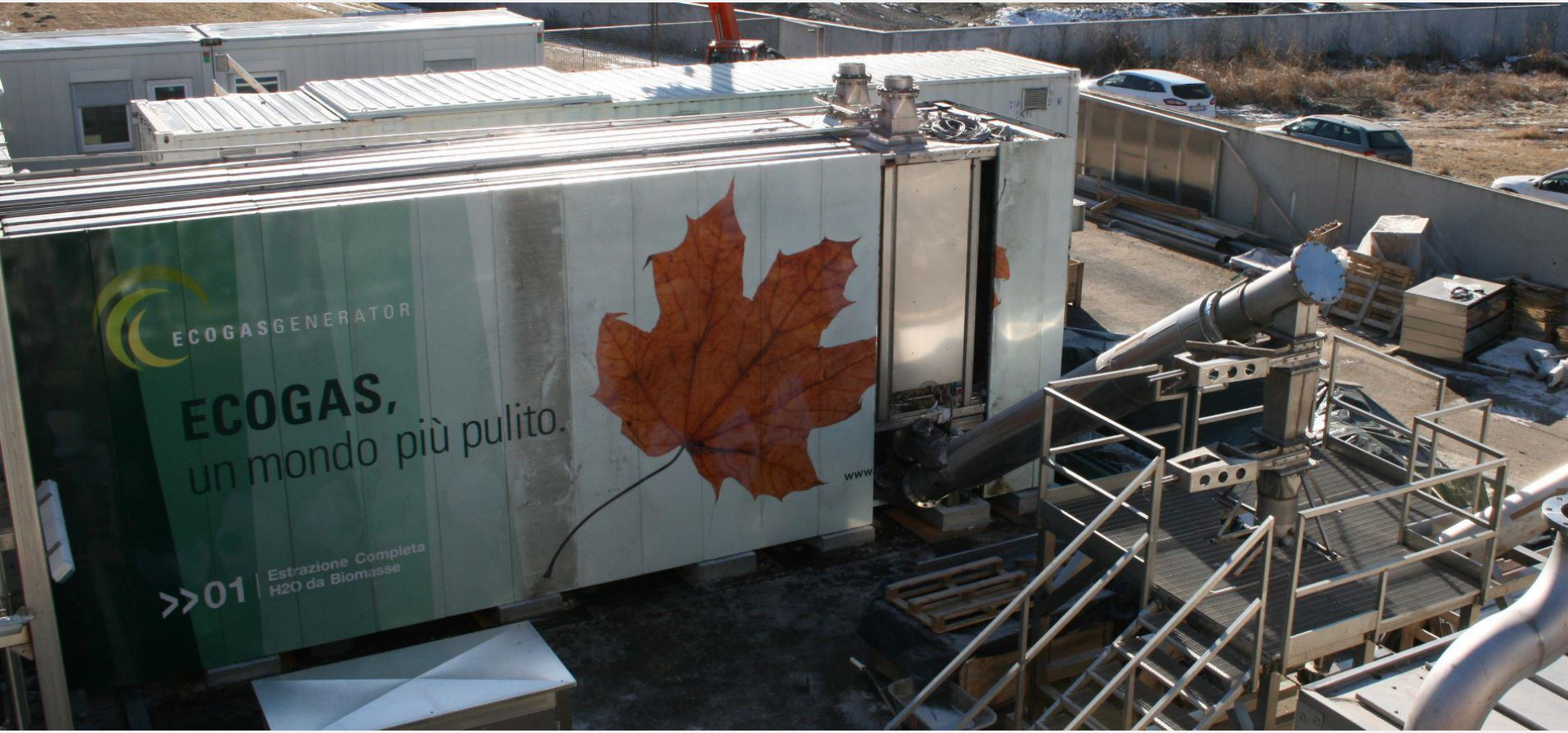
ACTIVITY

The activity carried out by Ronda Engineering started in 2007 building a pilot plant wherewith Ronda performed test on these materials:

- Urban solid waste
- Sludge
- Manure
- Wood

Realization of a 1.250 kW plant in Südtirol with positive technical advisory of Protos S.p.a. (primary technical advisory company)

Ecogasgenerator 1.250 kW – work in progress



Ecogasgenerator 20 kW – lab plant

PRODUCT PHILOSOPHY

We have followed FOUR principles to realize Ecogasgenerator:

1. Search the right solution to transform biomass in environmental zero impact byproducts
2. Use of any kind of biomass
3. Every necessary process step is integrated in the plant
4. Modules based system factory tested to have easy transportation and installation

PROCESS STEPS

1. Drying and water treatment

2. Pyrolisis

3. Gassification and char disposal

4. Dust removal

5. TAR cracking

6. Cooling and dehumidification

7. OTTO cycle CHP

DATI TECNICI PRINCIPALI 3.000 kWe

Combustibile solido impiegato		Cippato	RSU
Potere calorifico inferiore al 30% di umidità	kJ/Kg	13708	12936
Consumo specifico combustibile al 30% di umidità	kg/kWh	0.79	0.85
Sostanze volatili al 0% di umidità	%	85.5	65.9
Carbonio fisso al 0% di umidità	%	13.7	9.1
Ceneri al 0% di umidità	%	0.8	25
Potenza elettrica	kW	3000	3000
Potenza termica totale disponibile verso l'utente	kW	3492.4	3758.11
Consumo orario combustibile al 30% di umidità	kg/h	2375.8	2556.5
Potenza termica introdotta totale	kW	9046.5	9186.4
Perdite termiche totali	kW	2554.1	2428.3
Rendimento elettrico totale impianto	%	33.16	32.65
Rendimento termico calcolato con acqua in ingresso a 70°C e in Uscita a 90°C	%	38.6	40.9
Coefficiente di utilizzo combustibile	%	71.7	73.5
Rendimento alternatore	%	95	95
Rendimento motore	%	40	40

GAS ANALYSIS: BAD COMPONENTS

Acetonitrile	1.6 mg/Nm³	EPA TO-15 1999
Acrylonitrile	0.4 mg/Nm³	EPA TO-15 1999
Methyl ethyl ketone	1.0 mg/Nm³	EPA TO-15 1999
Benzene	343.6 mg/Nm³	EPA TO-15 1999
Toluene	232.5 mg/Nm³	EPA TO-15 1999
Ethylbenzene	2.2 mg/Nm³	EPA TO-15 1999
m,p-Xylene	9.4 mg/Nm³	EPA TO-15 1999
Styrene	101.6 mg/Nm³	EPA TO-15 1999
1,2,4Trimethylbenzene	0.2 mg/Nm³	EPA TO-15 1999
Indene	92.5 mg/Nm³	EPA TO-15 1999
Naphthalene	37.6 mg/Nm³	EPA TO-15 1999

STRENGTHS

1. Can be used all type of biomass
2. TAR cracking
3. Environmental zero impact byproducts (purified water, vetrified ashes, CHP smoke)
4. Factory built (higher production efficiency)
5. Easy transport and installation

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ECOGASGENERATOR