

A faded background image showing industrial equipment, likely part of a biomass gasification plant, with pipes and structural elements.

IEA Bioenergy Agreement: 2007-2009
Task 33: Thermal Gasification of Biomass
Second Semi-annual Task Meeting, 2009

Breda, Netherlands
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Country Report on Biomass Gasification: ITALY

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Update in Support Policies

Incentives on power production via biomass were recently adjusted by Law 23 July 2009, n. 99 "Provisions for the development and internationalization of companies, and energy"

- 1) If plant capacity is up to 1 MW, an all-inclusive value of **0.28 € per kWh** is now attributed to the produced electrical energy regardless of supply chain length, while previously a price of 0.30 and 0.22 € per kWh was recognized for short and long supply chain respectively.
- 2) The concept of "agricultural and forest waste" and biomass from "short supply chain" (70 km) remains valid in order to calculate the coefficient (**1.80**) to be attributed to Green Certificates, even if the related Implementing Decree is still necessary; on the other hand, this coefficient was raised from 1.10 up to 1.30 for biomass different from those mentioned above.

Current Incentives Summary

Green Certificate (GC) for each MWh generated multiplied by a coefficient of 1.80 if either agricultural and forest waste or biomass from short supply chain is used (otherwise 1.30).

<p>Green Certificate (current value ~ 0.089 €/kWh)</p>	×	<p>Coefficient (1.80 if "short supply chain")</p>	+	<p>Electricity Price (current value ~ 0.09 €/kWh)</p>
<p>TOTAL ~ 0.25 €/kWh</p>				

For capacities up to **1 MW**, plant owner can choose, as an alternative to GC, an all-inclusive value of **0.28 € per kWh** for electrical energy delivered to the grid.

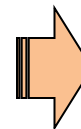
Both incentives are offered for **15** years, after that electrical energy can be traded to at the price guaranteed by the mechanism of the "dedicated drawing" by GSE (Electrical Services Provider).

Under certain conditions, these incentives may be cumulated with other forms of support in capital account from EC, national or regional Government.

Update in Market Situation

Biomass gasification for power and CHP:

- ❑ according to GSE, several applications in order to obtain the qualification as plant powered by renewable sources (IAFR qualification)
- ❑ great interest by farm owners, small communities, etc.
- ❑ no further commercial implementation with respect to last Task 33 Meeting
- ❑ more interest by big players in gasification of wastes: functional/operational testing of Malagrotta gasifier (~ 100 MW) by 7-Hills (technology by JFE) is almost accomplished



Current implementations:

- **Quingentole (MN)**
 - Caema Eng.
 - 70 kW_e + 70 kW_{th}
 - Status: operating
- **Vigevano (PV)**
 - Caema Eng.
 - 500 kW_e + 1 MW_{th}
 - Status: start up
- **Castel d'Aiano (BO)**
 - Stirling Danmark
 - 35 kW_e + 170 kW_{th}
 - Status: operational testing completed

Barriers

- ❖ Biomass supplying at a reasonable value (Prime Energy plant at Rossano suffered this problem also)
- ❖ Declining interest by big companies (Marcegaglia, Ansaldo)
- ❖ Small companies not ready yet to sell turnkey plants, with the exception of Caema Eng.; other companies (SOCOGES, SERI, ICQ) declare to be on the way to be ready
- ❖ Lack of clear and provable information to potential customers
- ❖ Absence of long-term successful examples (vicious circle)
- ❖ Achievements of competing technologies, such like ORC: Turboden has 13 operating plants in Italy (capacities ranging from 200 kW to 1.5 MW and being on average around 1 MW), in most cases (9 plants) constructed in the last two-year period and declare 18 new plants under construction.

Biomass Gasification at Trisaia R. C.



1. Air-Blown Fixed Bed Downdraft Gasifiers, with Conventional Gas Cleaning: Filtration Units and Water Scrubber, combined to Internal Combustion Engines (30÷80 kW_e)



2. Dual Fluidised Bed Steam Gasification Pilot Plant (500 kW_{th}) with Hot Gas Cleaning via an Adsorbing Reactor and a Filtration Unit (Cyclone + Ceramic Filter)



3. Air/Steam-Blown Fixed Bed Updraft Gasifier (150 kW_{th}) with Advanced Gas Cleaning: Coalescent Filters and Bio-Diesel Scrubber (*under construction*)



4. Interconnected Fluidised Bed Steam/Oxygen Gasification Pilot Plant (1.3 MW_{th}) with Catalytic Ceramic Candles inside the Gasifier (*patented by ENEA/University of L'Aquila - under construction*)



5. Molten Carbonate Fuel Cell (by AFCo), 125 kW to be tested with producer gas by different pilot plants (*under construction*)



Updraft Gasifier

Project progress: 85%



End of installation works:
November 2009

Scheduled tests:

- gasification
- producer gas enrichment via WGS and CO₂ separation



Fluidised Bed Gasifier

Project progress: 70%



End of installation works:
January 2010

Scheduled tests:

- gasification



Molten Carbonate Fuel Cell

Project progress: 50%



End of installation works:
April 2010

Scheduled tests:

- assisting gases mixture, simulating a producer gas, as fuel
- direct use of producer gas



A faded, grayscale image of a ship's deck with several people in white uniforms and hard hats, likely crew members, standing near a railing. The image is positioned at the top of the slide, behind the main text.

**THANK YOU
FOR YOUR
ATTENTION!!!**