



Metabioresor



**A FEASIBLE PROCESS
A SUSTAINABLE FUTURE.**

Welcome

to the first issue of the “METABIORSOR” (LIFE08 ENV/ES/000113) project newsletter.

The aim of this newsletter is to disseminate, on a regular basis, both the key aspects of the project and the development of its activities. Our purpose is to publicize its activities and results and promote its achievements, which could be used by others, as well as the pitfalls to avoid.

In this issue:

**PRESENTATION OF THE PROJECT
ACTIVITY SCHEDULE**



PRESENTATION OF THE PROJECT

BASIC PROJECT DATA:

Title: "Pilot Plant for Complete Energy Recovery of Different Municipal and Livestock Waste Materials and By-Products".

Acronym: METABIORESOR

Location: CGR (Center for Waste Management) of Barranco Hondo, Lorca (Spain).

Funding: LIFE+ programme, 2008 call.

Budget: € 2 645 308.

Grant: € 1 231 913.

Duration: June 2010 – May 2014.

PARTNERS

 • **IMIDA:** Project Coordinator.



• Lorca City Council (Spain).



• IFIP (Institut du Porc, Francia)



• UPCT (Technical University of Cartagena, Spain)



• ALIA (Feed Cooperative of Lorca, Spain)



• INAPORC (Inter-professional Pork Organisation, France)

Contact: www.metabioresor.eu
info@metabioresor.eu

AIMS OF THE PROJECT

This project aims to achieve the complete energy recovery of a series of municipal and livestock by-products and other organic wastes generated in the communal area of Lorca (Spain), demonstrating innovative approaches, technologies and methods for energy recovering.

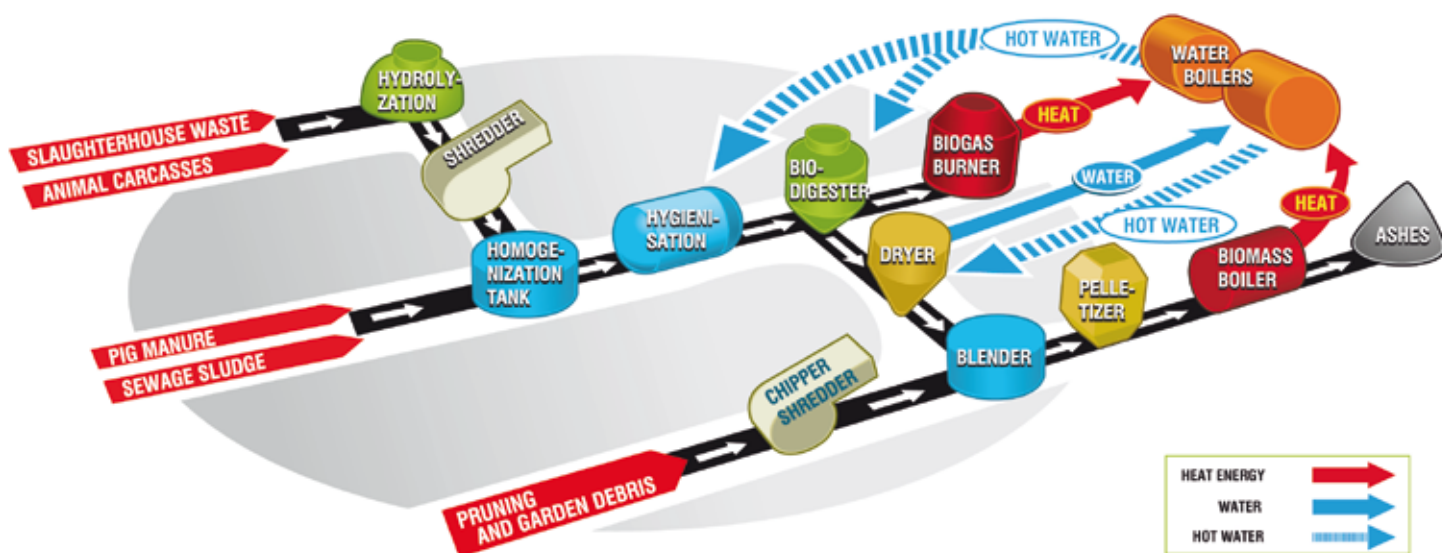
Currently, the management of these organic by-products and wastes represents a high cost for various sectors: The City Council has to manage pruning and garden debris, cull wood, sewage sludge from urban wastewater, etc. Livestock farmers, who must find a solution to the management of pig manure and carcasses. Agro-food industries such as slaughterhouses have also to manage animal blood and hair, among others.

Moreover, all these organic by-products and wastes are a serious environmental problem, since they represent large volumes that, besides being little or not at all recovered for most of them, normally end up (with the exception of pig manure) in a landfill or have to be treated by an authorized agent.

METABIORESOR has developed a novel process that can treat all these wastes by transforming them to less than 2% of their initial amount (1000 kg of waste is reduced to less than 20 kg of ash), reducing by nearly 80% CO₂ emissions associated with the management of this kind of waste and, moreover, generating energy in the process.



THE GENERAL OUTLINE OF THE PROCESS IS AS FOLLOWS:



Feedstock to be used:

Slaughterhouse waste and animal carcasses: to be hydrolysed (at origin or in plant).

Pig manure and sewage sludge: which are mixed with the preceding hydrolysate, then crushed, homogenized and hygienised.

After hygienising the mixture, it is fed to the biodigester. The biogas produced at this stage goes to a biogas burner, where heat energy is generated in order to heat the digesters and the hygieniser. On the other hand, digestates from the biodigester are partially dehydrated and passed to a blender.

Pruning and garden debris: which are shredded/chipped and go to the blender, where they meet the above-mentioned dehydrated digestate. The resulting mixture is fed to a pelletizer, where it is transformed into pellets or granules that feed a biomass boiler that produces heat energy for the water boiler.

The boiler is heated by the energy produced in the biomass boiler, while the water comes from the dryer and from a tank that collects rainwater. For its part, the water boilers supplies hot water to the dryer.



INNOVATIONS OF THE METABIORESOR PROJECT

The design of this project includes many innovations, both in its approach and in the use of some equipment at prototype stage. It can be globally considered as a leading technological innovation. The main innovations are:

A)

The **hydrolyzation** of pig carcasses and slaughterhouse waste (e.g. boiled blood and hair). The system of disposal of carcasses and other organic wastes through hydrolyzation with bio-activators is a variant of the anaerobic digestion and one of the most rational and economical methods for their elimination. This hydrolysis is carried out in watertight tanks at mesophile temperatures, heated by solar energy (thermal plates).

B)

The **biomethanation** process to be used in this project is called 'co-digestion' and it works with a mix of diverse fermentation feedstock. In this project we expect to test new feedstock in a co-digestion process that will be based on liquid manures and sewage sludge combined with those new materials, an innovation with respect to the mono-digestion systems commonly used so far.

This process of biomethanation is expected to produce a higher amount of biogas that will be stored in a gasometer, waiting to be burned for heating a water boiler. In other larger scale projects that

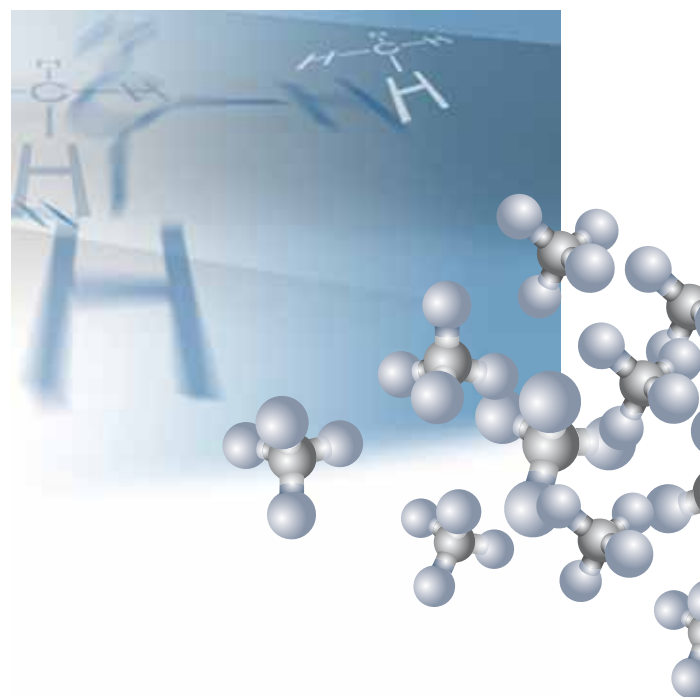
can be done in the future, the biogas produced could be used for the operation of a motor suitable for this type of fuel that would drive an electricity generator, including a system for recovering the heat energy produced (i.e. a combined cycle plant) which will increase the energy efficiency of the system.

C)

A new **drying** treatment of the digestates from biomethanation, with low energy cost thanks to a vacuum evaporation system.

D)

Digestates partially dehydrated will be mixed with pruning debris and cull wood, then finely ground, and the resultant product will be **pelletized** and then burnt in an appropriate biomass boiler.





EXPECTED RESULTS OF THE PROJECT



1
Reduction of the waste stream to landfills by recycling all organic materials and recovering their energy in the form of biogas and biofuels.

2
Reduction of environmental pollution:

- Minimizing process waste (<2% of the initial amount): 1000 kg of waste is reduced to less than 20 kg of ash.
- Reducing carbon emissions (77–89%).

3
The METABIORESOR pilot plant will produce energy (biogas and fuel)

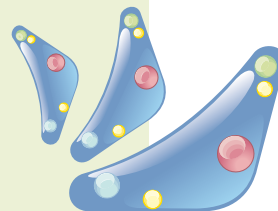
4
With the volume and type of waste generated in Lorca, and on a commercial-scale plant, we could obtain about 4 600 t of “optimal mix” with which to achieve:

- Electrical energy production for more than 2 500 homes.
- Thermal energy production of almost 3 500 MW.
- Freeing up more than 3 million litres of water.
- And only about 50 tons of ashes as final waste.

ACTIVITY SCHEDULE

The project has three types of basic activities:

- Construction of the pilot plant.
- Development of pilot plant tests.
- Project communication and dissemination.



TYPE OF ACTIVITY	2010		2011		2012		2013		2014
	2 SEM	1 SEM	2 SEM	1 SEM	2 SEM	1 SEM	2 SEM	1 SEM	
CONSTRUCTION OF THE PLANT									
DEVELOPMENT OF PLANT TESTS									
COMMUNICATION ACTIVITIES									

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