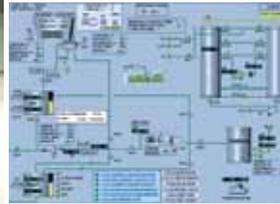




TURN YOUR WASTE INTO PROFIT
AT YOUR OWN SITE



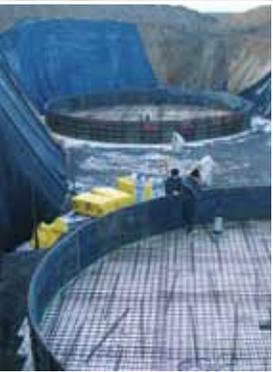
AGRICULTURE



FOOD INDUSTRY



WASTE WATER



“Treating waste onsite means that we no longer have to pay more for disposal or to move it to a treatment site. Apart from making considerable savings, you produce your own energy, which you can inject back into your plant or you can resell it...”



About us ...

Thanks to its revolutionary technology, since 2008 GreenWatt has been designing and building a new generation of biogas plants which are fully adapted to agriculture and the food industries.

Developed at the actual production and processing site, these units are compact, fully automated, reliable, flexible and always profitable.

GreenWatt manages the entire biogas project, from the feasibility study to commissioning plants, with maintenance contract and performance guarantee.

MAJOR ASSETS

What GreenWatt is offering is a real revolution in the world of biogas. Because, even if biogas has undeniable advantages, its success is still very limited due of the many constraints linked to the process.

In most cases, the plants are still overwhelming or they are far away from the production sites. They require an external supply of manure and can only operate if they are continually powered by a constant substratum, which, again, must be adapted to the requirements of the plant. This requires qualified personnel. Finally, the operating expenses are high, affecting the profitability of the project.

A pioneer in its market, GreenWatt responds effectively to all these challenges by providing a tailored and turnkey solution for converting waste into energy that is easy, reliable, profitable and sustainable, all at once.

“Moving vegetal waste means moving 90% water. This is a tremendous burden on the cost price...”

Leader in onsite conversion of waste into energy

A spin-off from the Catholic University of Louvain, Belgium, and founded in 2004, GreenWatt has undergone dramatic change. Backed by its patented and proven technology, the company increased its success in Europe and Latin America, and is now having an international impact. Today, GreenWatt plans to become the leader in onsite conversion of organic waste into energy in the agricultural and food sectors. Rooted in academic research at the forefront of technology, the company relies on the expertise of scientists, engineers and technicians pursuing their R&D efforts in their own laboratories and a "Project Engineering" team that is highly specialised in construction.

AREAS OF APPLICATION

GreenWatt technology can be adapted to all sizes of business and every type of production and processing operation of the agriculture and food sectors, and of waste water.

1 AGRICULTURE

Waste from potatoes, onions, carrots, tomatoes, peppers, corn, beetroot, beans, peas, chicory, lettuce, leeks, courgettes, spinach, aromatic plants, cereals, bananas, pineapples, kiwis, melons, apples, pears, prunes, grapes, strawberries, etc.



2 FOOD INDUSTRY

Waste from the brewing, wine, dairy, coffee, chocolate, canning industries, failed production, frozen food, ready-meals, etc.



3 WASTE WATER

Wash water, drain water from production, sauces, etc.



4 SUSTAINABLE BIOMASS



2004-2009

Foundation of GreenWatt, a spin-off from the UCL (Université Catholique de Louvain - Belgium)
Technological development
Patent filing

2010

Commercial launch
First plant in Belgium

2011

Commissioning of a second plant in France
Signing new projects in France
Creating a French subsidiary in Avignon

2012

Four projects under construction
Launching of a sustainable biomass project (cactus)
International expansion in Europe, North Africa and Latin America
Office in Santiago, Chile
Increase in capital, new partners

KEY DATES

OUR TECHNOLOGY

GreenWatt enables its customers to convert their waste

Multi-stage technology

Taking place in several phases, the stages of anaerobic digestion have conflicting operating parameters, which require strict management of regulation, and, historically, a supply of external liquid manure.

To optimize each stage and therefore increase the performance and robustness of the process, GreenWatt has developed its own multi-stage technology. This is based on the separation and specialization of the various phases of anaerobic digestion into two or three separate organs, in order to control the parameters of these different reactions independently of one another.

HYFAD®

A GreenWatt plant is generally made up of 3 organs: an hydrolysis tank, the HYFAD® (High Yield Flushing Anaerobic Digester) and the post-digester.

The first organ, the hydrolysis tank, receives organic waste and turns it into acid liquor to fuel the HYFAD®.

The HYFAD®, one of the technologies patented by GreenWatt, can achieve a high methane yield due to its high concentration of bacteria attached to "fixed bed" (biofilm), and its anti-clogging system that cleans the filter and recovers the biofilm.

Finally, the post-digester finishes degrading organic matter that is slower to digest and may not have been fully processed in the hydrolysis tank.

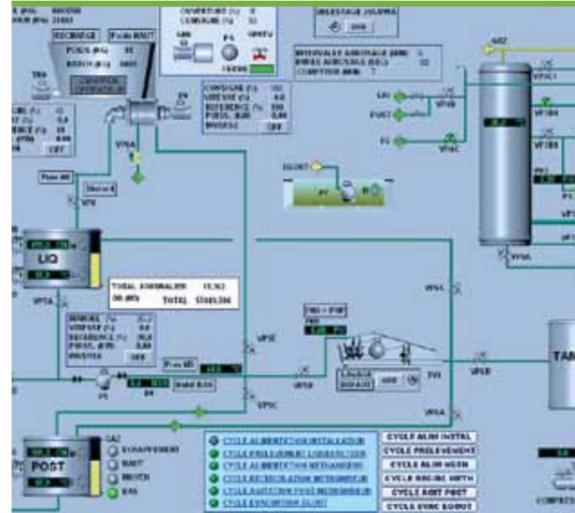
METHANATION TAKES PLACE IN 4 STAGES

- | | | |
|---|--------------|--|
| 1 | Hydrolysis | ROBUST Bacteria FAST Reproduction Tendency towards ACIDIC Environment |
| 2 | Acidogenesis | |
| 3 | Acetogenesis | |

GREENWATT TECHNOLOGY



- | | | |
|---|---------------------------------------|--|
| 4 | Methanogenesis (Methane formation) | SENSITIVE Bacteria SLOW Reproduction Environment MUST be pH-NEUTRAL |
|---|---------------------------------------|--|



A GreenWatt unit is fully automated
It is also controlled remotely by our specialists



Honeycomb bacteria support in the HYFAD®



The HYFAD® fully secures the methane production

YOUR BENEFITS

materials into renewable energy easily, simply and autonomously

OPERATIONAL FACILITY

- Operation: less than 1 hour/day by low-skilled staff
- Fully automated
- Self-regulated
- Limited operational costs

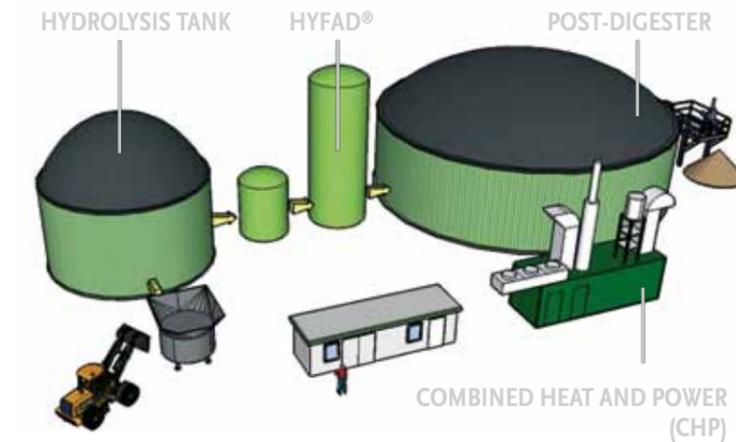
Anaerobic digestion requires constant attention. Generally, it has to be checked and monitored by highly qualified staff. GreenWatt offers a process which is completely safe and fully automated, requiring minimal maintenance and presence.

COMPACT

GreenWatt plant = half the size of a conventional plant (with equal amounts of waste)

Units designed by GreenWatt occupy half the space required by a conventional biogas plant. This is why it is easy to build on the waste production site itself. Renewable energy produced by the anaerobic digestion of waste can be fed back into the production unit or sold to third parties.

ONSITE TREATMENT



GUARANTEED RETURN

ROBUST AND RELIABLE

- The production of methane is stable and consistent regardless of variations in input into the unit (quantity)
- Safety of the bacterial population

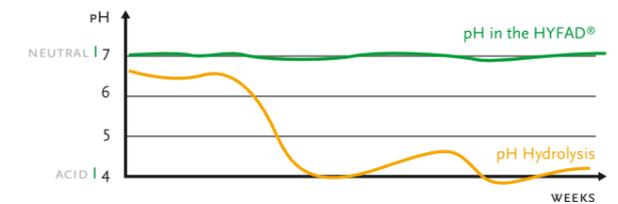
Your business will ...

- turn waste issue into a renewable energy solution
- improve its carbon footprint
- be part of a philosophy of sustainable development
- use or sell the digestate as organic fertilizer

ADAPTED TO YOUR WASTE MATERIALS

The unit safely adapts to your waste without risk of acidification, regardless of:

- The type
- The variability (quality and tonnage in time)



In a conventional plant, a change in the composition of input risks destabilizing the process (acidification) and destroying the bacteria responsible for methane production.

GreenWatt technology removes this risk completely. Indeed, the pH in the HYFAD® remains neutral and stable even when the liquefier is overfed waste (and therefore acid).

GreenWatt units can receive very different inputs from one day to the next, in varying amounts, and remain totally safe. This is what we call the robustness of the system.



“While we were previously paying for 1,800 tons of waste disposal a year, our own 100 kWelec biogas plant now provides us with 1.7 MWh of electricity a day, equivalent to the annual consumption of 150 families, 1.68 MWh of heat, equivalent to the annual consumption of 100 families, and 500 tons of compost...”



PROJECT TIMELINE

WEEKS

Relevance study

MONTHS

Feasibility study
Pilot tests
Pre-engineering: design unit
Offer - contract
Financial and legal aspects

1 YEAR

Detailed engineering - specifications for construction
Permits and authorizations
Construction - stress tests
Starting-up
Performance tests
Final commissioning
Technical assistance - maintenance

Experts at your service

“R&D” and “Project Engineering”

The GreenWatt team is made up of engineers and experts who ensure the design and construction of your biogas plant at your site.

From the feasibility study to the launch of operations in your unit, our teams are involved in every stage of project development. They analyse all the parameters to maximise the overall efficiency of your plant.

Our R&D team carries out studies of relevance and feasibility, and works out the following in our laboratories:

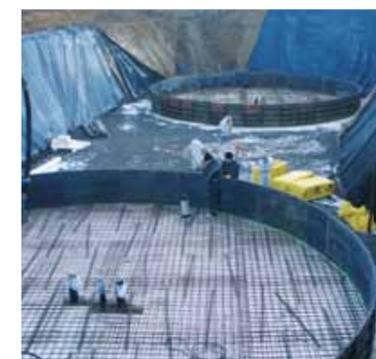
- biogas potential of your waste
- continuous digesters (biogas process simulation of your waste in a 2-litre reactor)
- pilot tests (simulation of the process of anaerobic digestion of your waste in a 300-litre reactor)
- analysis of the gas, the substrates and the digestate

Our “Project Engineering” team insure the design, the construction and the commissioning of the entire facilities at your site.



OUR CUSTOMERS CONFIRM IT

“The life of a GreenWatt plant is about 20 years and has a payback period of 3 to 5 years. Besides the fact that they are a sustainable and profitable solution for organic waste, these biogas units help to improve the company’s carbon footprint and its "green" position in the market...”



MR CLAUDE BOYER - BOYER SAS, MOISSAC - FRANCE

Treating our waste from melons became increasingly important and too expensive. Now all our waste from melons is turned into electrical or thermal energy.



MR JOËL BOYER - BOYER SAS, MOISSAC - FRANCE

It should also be noted that reducing CO2 emissions is a commercial advantage vis-à-vis our largest customers.

BIOGAS PLANT
100 kWelec, input: waste from melons, apples and prunes



MESSRS JOSÉ, PHILIPPE AND PATRICK LARRERE - COMPANY LARRERE & FILS, LIPOSTHEY - FRANCE

As farmers we believe in the importance of gaining autonomy on key issues such as the management of waste, energy and organic amendments. The investment we have made into our own biogas plant will have a payback period of 4 years, and this project will be a big sign of our commitment to organic and autonomous farming!

BIOGAS PLANT
370 kWelec, input: waste from carrots and corn



MR JOOST DEPAEPE - JOLUWA NV, NIVELLES - BELGIQUE

Thanks to GreenWatt, I have found THE sustainable solution to treat the forced roots of my chicory. They now feed my own production of electricity and heat for my crops. As for the surplus thermal energy, I resell it to a neighbouring printing company!

BIOGAS PLANT
100 kWelec, input: forced chicory roots





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