



ATHENA

RECHERCHE & INNOVATION

Stop the waste! Let's turn your wastewater and waste into resources!

Your wastewater and waste must be valorized

Your wastewater and organic waste contain water of course, but also sugars, proteins, lipids and minerals. That's all microorganisms need to grow. **Not recycling these effluents is like wasting these materials!**

After several years spent in the laboratory, we proposed to **Laiterie Saint-Père** to install a pre-industrial demonstrator within their factory in order to validate, in real life situations:

- Our on-site effluent treatment capacities;
- Our ability to reuse wastewater treated directly in the plant (REUSE);
- Our capacity to produce, on site, from effluents, reusable hydrogen in the plant;
- Our ability to offer, in the long term, an economically viable and zero waste solution.

A demonstrator to build the future!

Since April 2024, with the support of Laiterie Saint-Père, we have been able **to set up and operate a 1m³ demonstrator**, designed and automated as a real factory, on a reduced scale. We were able to conduct many and varied trials.

Indeed, the dairy supplied us with wastewater and production waste (dessert creams, semolina cakes, rice cakes, etc.).

In the summer of 2025, we were able to **validate our concept** and confirm that **TRL 7 had been reached** (validation in a representative environment).

We overpassed our limits!

This reactor, 4000 times larger than our reactors of the bench, allowed us to take a big step forward in our change of scale and to validate our performance.

This size has mainly forced us to push our limits and to show imagination in order to:

- Control other microorganisms naturally present in effluents;
- Optimize our purification performance;
- Validate the continuous operation of our solution;
- Validate the production of co-products (hydrogen, CO₂, organic acids, etc.);
- Define an effective concept for our upcoming industrial pilot and future factory.

In two years, we were able to understand the adaptations that need to be made to have a fully operational solution on an industrial scale.

Most of the improvements made will be taken up in the next scale changes.



Innovation :

We purify water while producing hydrogen thanks to dark fermentation



Zero wastes:

All co-products from the HNV process are valued. 0 waste!



A Cost-Effective Transition:

By valuing the entire input, we are leading a competitive transition!



Efficient wastewater treatment:

Let's reuse treated wastewater!

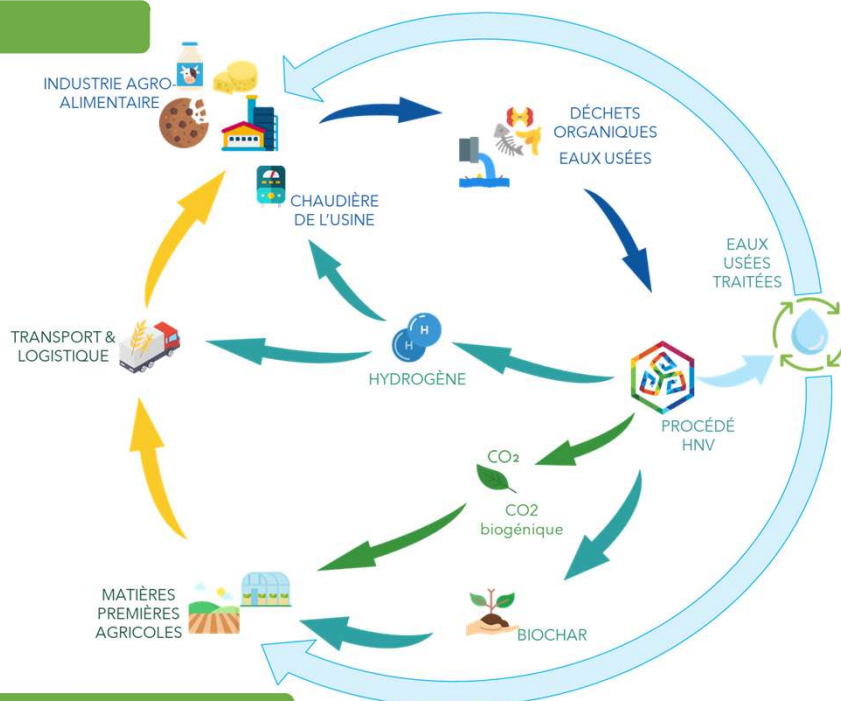
It works! Don't hesitate to contact us to discuss!

Results analysis

These tests demonstrated **our ability to purify wastewater and organic waste** with very variable loads.

This also allowed us to validate that **our bacteria are very resistant** and that they survive even prolonged periods of famines.

This finally allowed us to validate that our biorefinery model would be technically viable, and that **our economic model is adapted**.



Notre modèle économique : Water & Energy-as-a-Service

Our discussions with clients and prospects made us realize that, beyond technological innovation, we also had to be creative in terms of business models. Indeed, they do not want to invest in a new utility (**0 CAPEX**), nor to have to manage the operation of the solution because it distances them too much from their job.

We therefore propose to implement this innovative solution without any initial investment. With a **Water & Energy-as-a-Service solution**, you only pay for what you use (treated water, reused water, energy, etc.).

Who are we ?

Athéna Recherche et Innovation is a deeptech, recognized by BPI France and the French government. Its status as a disruptive young innovative company demonstrates its strength in innovation and the technological breakthrough that the multidisciplinary team is developing.

Started in 2017, the project is entering its final R&D phase with the upcoming implementation of a 30m³ industrial pilot to prepare for the development of the first plant.

Take action!

You have waste due to a lack of imagination!

Each industrial site has untapped potential to recover its waste. The question is no longer whether this potential exists, but how important it is.

We propose to conduct a feasibility study allowing you to:

- Accurately characterize your effluents and the best treatment method;
- Assess its potential for reusable water production (up to 80% autonomy);
- Assess its potential for hydrogen production (up to 50% natural gas autonomy);
- Validate the associated economic model (up to 15% savings).

Evaluate the potential of your site today.



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