



Bio Base Europe
Pilot Plant

PRESS RELEASE
Ghent, 27 november 2023

Following recent tripling of its fermentation capacity, the Bio Base Europe Pilot Plant invests in additional purification equipment, online sensors and water purification

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The Bio Base Europe Pilot Plant engages in two new investment projects supported by the European Regional Development Fund: [Bio Base Advance](#) and [Bio Base Release](#). After the previous investment round announced at the end of 2021 and enabling a tripling of the fermentation capacity, this now involves a total investment of almost €6M in additional purification equipment, online sensors and water purification. Forty percent of the invested amount is supported by the European Regional Development Fund and 10% by the Flanders Innovation and Entrepreneurship Fund. This brings the post-covid investments at the Bio Base Europe Pilot Plant to a total of 34.5 million euros.

Below we briefly describe the two new investment projects as well as “industrial biotechnology”, the technology that is pivotal to these investments.

Bio Base Advance

Why this investment?

The production and development of microbial proteins has been on the rise in recent years. Microbial proteins have a very wide range of applications in the food, cosmetic, medical and diagnostic industries. The list of protein-based applications is endless, as is the potential of their microbial production.

Due to the urgent need for protein diversification, the demand for scale-up of fermentation and purification processes of **sustainably produced microbial protein** has increased enormously in recent years. The production of microbial protein requires **up to 100 times less land and up to 30 times less water than animal protein production**. In addition to logistical advantages, it also brings about a further reduction of greenhouse gas emissions.

The investment

To accelerate the industrialization of such innovative processes and meet the high demand, BBEP will, through the Bio Base Advance project, **invest in additional equipment for the purification of microbial protein from the fermentation medium**, as well as in **infrastructure for local and effective treatment and analysis of the process waters** produced.

The new infrastructure will be equipped with **automation and state-of-the-art sensors to enable process monitoring, control and modelling** and therefore life cycle and techno-economic analysis from fermentation to wastewater treatment. This is to validate the expected lower ecological footprint.

[Click here to find more information on Bio Base Advance.](#)

Bio Base Release

Why this investment?

Depending on the microorganism and the genetic modification, during fermentation the desired molecules are either formed within the cell (intracellular) or transported outside through the cell wall (extracellular). In the latter case, the desired products end up in the fermentation medium, from where they can easily be analyzed and purified after separation from the cells. However, in the case of **intracellular production**, the cell walls must first be disrupted to release the products. The breaking open of microbial cells (lysis) can occur in different ways, depending on the type of microorganism and the product. There are mechanical (e.g. sonication, high pressure homogenization, ball mill), chemical (e.g. detergents, osmotic cell lysis) and enzymatic methods. This releases the entire cell contents, which greatly complicates further purification. Monitoring the preceding fermentation process is also less obvious.

Unlike many other sectors, in industrial biotech only a limited number of parameters are monitored online. However, to date, crucial process parameters have typically been measured offline. To enable automation and data analysis and bridge the gap to 'industrial biotechnology 4.0', advanced sensors for online measurements of certain process parameters are indispensable, especially in the case of intracellular products.

The investment

By investing in a **widely applicable fermentation sensor with analytical system for in-situ, real-time measurement and analysis of multiple products, nutrients and metabolites in parallel**, BBEPP meets the needs of partners who want to gain deeper insight into their fermentation process, or themselves want to implement such technologies to, for example, reduce extensive analysis. On the other hand, BBEPP can use such sensors to optimize or standardize fermentations (mainly complex intracellular, demonstration-scale projects or during large campaigns).

With Bio Base Release, BBEPP invests in specialized and **state-of-the-art process equipment** for, on the one hand, the **process control and monitoring of (intracellular) fermentations**, and on the other hand, in **equipment to break open the cells** and equipment to subsequently further fractionate and purify the mix of cell contents, fermentation medium and the desired product.

[Click here to find more information on Bio Base Release.](#)

Bio Base Europe Pilot Plant, a pilot facility for industrial biotechnology and the bio-economy

Industrial biotechnology, based on microbial fermentation and biocatalysis, puts micro-organisms or their enzymes to work to produce a wide range of high-quality, bio-based products, all based on simple, renewable raw materials or waste streams. Industrial biotechnology offers a sustainable, safe and scalable alternative to classical (petro)chemical production. Despite the strong advance of industrial fermentation processes in the last decade, with a record amount of investments in European biotech start-ups, the valorization of innovative ideas into real economic activities remains an insurmountable hurdle for many companies. The Bio Base Europe Pilot Plant (BBEPP) therefore forms an essential link in the innovation chain of the bioeconomy. BBEPP is a service provider that, as an independent pilot plant, assists companies in overcoming the step from laboratory to industrial scale – the infamous Valley of Death – by offering extensive scale-up (pilot) infrastructure and the associated expertise.

Questions, interview, pictures?

Contact Katrien Molders, Communication Manager at Bio Base Europe Pilot Plant
Email : katrien.molders@bbeu.org; Phone: +32 486 95 11 09 ; www.bbeu.org

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