

# Accelerating your biobased innovation

PROCESS DEVELOPMENT

SCALE-UP

CUSTOM MANUFACTURING

Kilogram to Multi Ton Scale



## Why more than 120 companies already teamed up with Bio Base Europe Pilot Plant

**Save time and money** thanks to our unique combination of equipment and expertise:

**Equipment:** A broad variety of state-of-the-art technical solutions is available at different scales, including:

- Fermentation scale up to 15 m<sup>3</sup>
- Gas fermentation facilities
- A wide range of DSP unit operations from bench-top to multi ton scale
- Combination of fermentation and Ex proof downstream processing
- ...

**Broad expertise: Scale-up is our core business!** Our operational team of engineers, operators and technicians combines decades of experience and technological know-how and guarantees a fast and efficient scale-up, resulting in faster learning curves and shorter time to market.

**Independence:** Bio Base Europe Pilot Plant is an independent facility. We have no industrial shareholders and operate in full confidentiality.

**Flexibility:** We design the project outline to your needs and flexibly build up process lines that can be operated 24/7.

**Transparency:** A close communication throughout the project ensures a seamless technology transfer in both directions. We welcome your presence at our facilities during the trials, the experience gained is yours!

**Quality management systems:** ISO9001, FSSC22000.

**Global player:** Bio Base Europe Pilot Plant collaborates with companies and research institutes from all over the world (Europe, Asia and The Americas). We assisted many key players in the biobased economy with their developments and managed to build up a vast network.



Bio Base Europe  
Pilot Plant  
The gateway to  
industrial  
production





# AN INDEPENDENT STATE-OF-THE-ART PILOT AND DEMONSTRATION FACILITY FOR BIOBASED PRODUCTS AND PROCESSES

Bio Base Europe Pilot Plant is an open innovation pilot and demonstration facility for process development, scale-up and custom manufacturing of biobased products and processes from lab to multi ton scale. A wide and flexible spectrum of modular unit operations combined with a team of highly trained and experienced engineers, process operators and technicians facilitates the translation of biobased laboratory processes into viable industrial processes.

Bio Base Europe Pilot Plant has successfully performed 225 projects for more than 120 companies.

WIDE and FLEXIBLE  
spectrum of modular  
unit operations



Team of highly trained  
and experienced  
engineers and operators



Successful  
scale-up  
of your process

## OUR OFFER



### Process Development

- Concept design
- Fermentation optimization
- Downstream process (DSP) development and optimization
- Bench-top feasibility trials
- Techno-economic assessment (in-house model)



### Scale up

- Feasibility and optimization trials in scaleable equipment
- Equipment available at different scales: bench-top, 100 kg, ton and multi ton scale
- First series compounds for application trials
- Demonstration of technology at larger scale
- Generation of pilot data incl. mass- and energy balances



### Custom Manufacturing

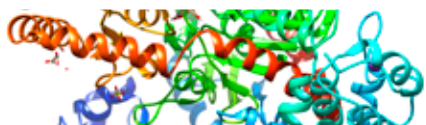
- Production of bulk bio-products up to multi ton scale
- 24/7 operations
- Quality control
- Food grade production
- ISO9001 and FSSC22000:
- Access to larger scale (>100m<sup>3</sup>)

## TECHNOLOGIES



### Biomass Pretreatment

Mechanical, physico-chemical, solvent-based and enzymatic pretreatment of biomass feedstocks .  
*e.g. acid hydrolysis, organosolv*



### Biocatalysis

Enzymatic conversions in aqueous and two-phase systems, immobilization of enzymes.  
*e.g. oligosaccharide synthesis, glycoside synthesis*



### Fermentation

Batch, fed-batch, chemostat  
Fermentation with: bacteria, yeast, fungi  
Aerobic and anaerobic fermentations  
Ex proof fermentations  
Scales ranging from shake flask to 2x15m<sup>3</sup>.  
*e.g. chemicals, industrial enzymes, food ingredients, cosmetics, fuels, flavours and fragrances*



### Purification and Product Recovery

Centrifugation, depth and cross flow filtration, evaporation, ion exchange, crystallization, solvent extraction, drying, etc.



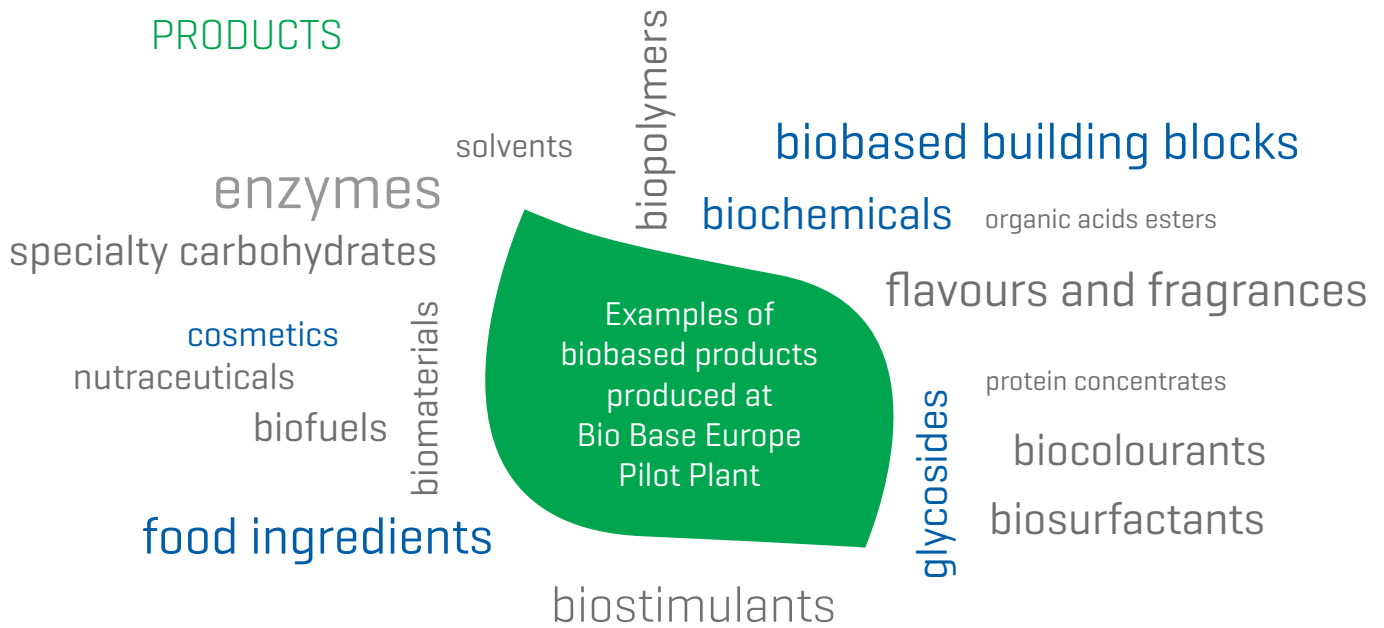
### Green chemistry

Chemical conversion, extraction, solvent evaporation, crystallization in Ex proof and corrosion resistant reactors up to 5m<sup>3</sup>.



### Gas Fermentation

High pressure 10L + high pressure 4\*1L gas fermenters. Auxiliary equipment for strict anaerobic cultivation and gas premixing.  
Gaseous feedstocks: industrial off-gas, syngas, methane... Containerized mobile gas fermentation demo under construction.



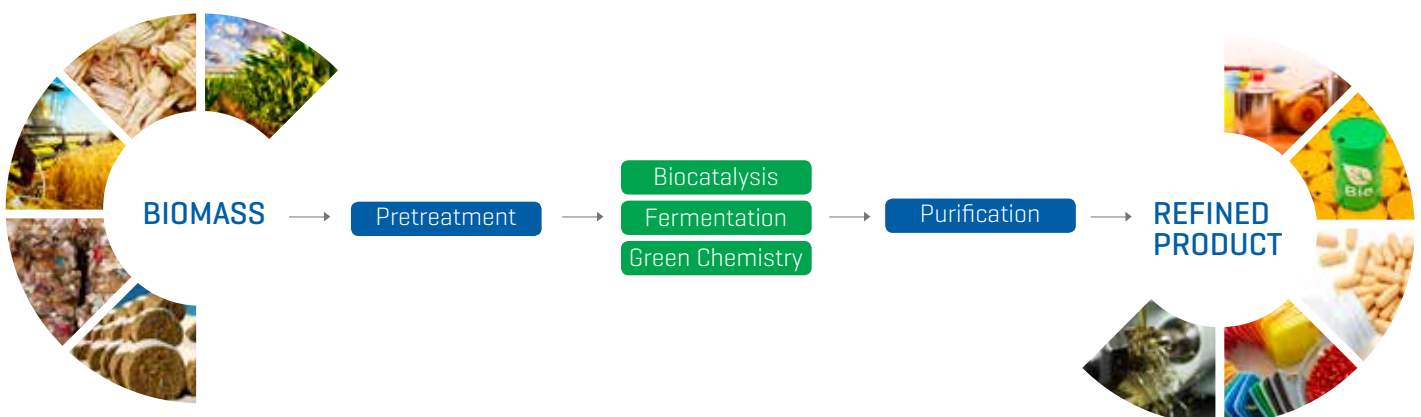
## EXPERIENCE

As an open innovation pilot and demonstration facility, Bio Base Europe Pilot Plant is open for collaboration with companies, research institutes and other partners active in the biobased economy.

At Bio Base Europe Pilot Plant, your processes are in the competent hands of highly trained engineers, process operators and technicians. Our team stands for a vast amount of know-how on both a scientific and technical level. Combined with decades of experience in scale-up and operating industrial equipment, our engineers translate your lab scale process into a viable industrial process.

We work in 24/7 operations if necessary. A confidential and close communication throughout the project as well as your presence at our facilities during the trials ensure a seamless technology transfer in both directions.

In addition, we can operate as a one-stop-shop, converting renewable feedstocks into sustainable products all under one roof.





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