

INNOVATIVE TECHNOLOGIES FOR THE MANUFACTURING OF (BIO-)PRODUCTS WITH UNIQUE QUALITY FEATURES

What does Secoya do?

Thanks to its unique approach, Secoya develops - and offers - novel technologies enabling the production of ingredients with **unique quality properties**.

By a smart combination of its complementary and proprietary technologies, Secoya enhances your production process, improving both quality and cost.

Available technologies

- Intensified **chemical synthesis**
- **Pervaporation** – Liquid/liquid separation
- **Crystallisation**



Scale-up by
Number-up



Small
footprint



Reduced
development
risk



Reduced
COGS

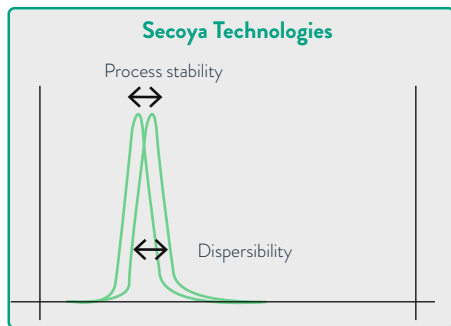
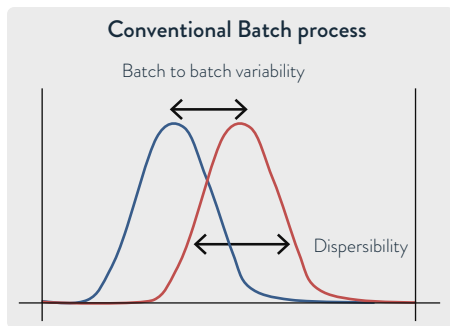


Quality by
design

Unique approach of Secoya

Secoya adapts the scale of industrial process equipment down to the ideal size in order to obtain an optimal control. Typically, Secoya's technologies are based on the use of capillaries whose diameter are in the mm or even μm range. Under these conditions, process parameters are precisely controlled. This results in a product exhibiting a strongly reduced polydispersity as well as batch-to-batch variability.

Furthermore, such conditions enable performance of processes that are not feasible in conventional batch reactors.



Secoya technologies

These technologies are inherently compatible with continuous manufacturing.

Crystallisation

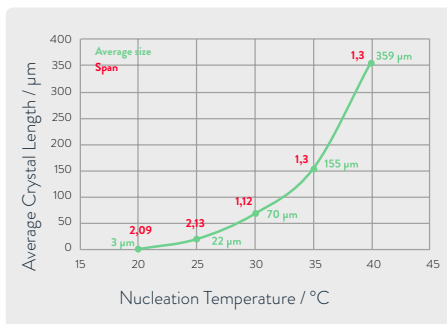
A one-step crystallisation process

Through the use of small diameter capillaries, Secoya is able to master supersaturation conditions and to control the nucleation process.

By precisely selecting parameters, nucleation rate can be adjusted to obtain the desired final crystal size, from 3 up to 400 μm in a single crystallisation step. Target morphism is easily achieved, as well as a narrow crystal size distribution.

As no physical micronisation is required, low crystal size powder exhibits an excellent flowability and thus excellent powder handling capacities.

The technology is subject to a patent (pending) and has been successfully tested on different molecules.



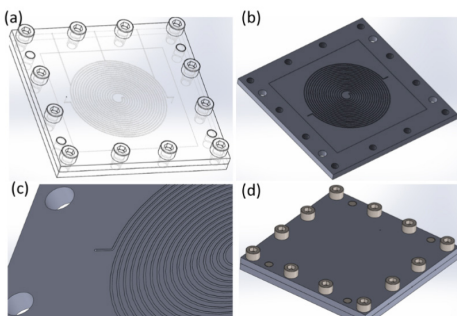
Example: Crystallisation of Aspirin with control of crystal size from 3 up to 360 μm

A prototype unit with a size of 1.5m³ is available for testing. It is designed to deliver about 10-15T/y. It can be used for different crystallisation methods: cooling, anti-solvent and co-flow.

Pervaporation

A low temperature fluid separation

Pervaporation is a liquid/liquid separation process through a selective and dense membrane. By creating a vacuum or introducing a flow of purge gas on one side of a dense membrane, volatile compounds in a liquid present on the other side will selectively diffuse through the membrane.



Example of a pervaporation unit.

In addition to its high energetic efficiency, pervaporation is not subjected to azeotropic limitations.

The Secoya pervaporation technology is an attractive solution for various applications.

Some examples are

- **Liquid/Liquid separation** in the presence of a temperature sensitive (bio-) product; extraction of a component such as alcohol or water
- For chemical & bio-processes: **continuous removal of volatile compounds** during fermentation, reaction, or to the feeding of reactants through the membrane.
- **Gas perfusion** for bioreaction

Intensified chemical process

High efficiency and quality by design

For intensified chemical process, Secoya acts as a service provider, developing new processes based on flow chemistry and its unique approach.

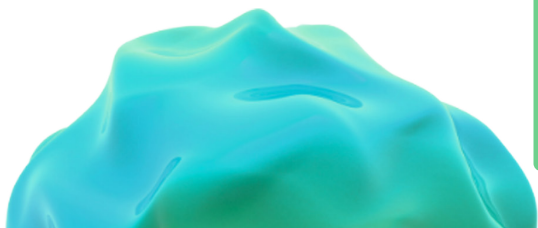
Secoya has a robust expertise in the field and has developed a holistic methodology enabling the fast and efficient development of new processes. These can integrate certain Secoya technologies.

Case study

Simplification of a process by reducing the number of reaction steps from 3 to 2, while multiplying the productivity by 3000 and increasing the yield from 85 to 95%

A methodical and holistic approach:

- Synthesis optimisation
- Reaction and process modelling
- Reactor selection and sizing
- Online monitoring selection and implementation
- Control strategy design



**For any request, please contact
Secoya Technologies.**

Secoya has also an additional technology, not contemplated in this leaflet.
The RayDrop is a droplet generator, that is an attractive way to generate
monodispersed micro-particles and micro-encapsulated drugs.



www.secoya-tech.com

info@secoya-tech.com

4 Fond des Més
1348 Louvain-la-Neuve (BE)